Verbal View of the Net and the Web for the Blind User

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Table of Contents

Verbal View of the Net and the Web for the Blind User.....1
PREFACE.....5
Universal Accessibility.....5
Available Tutorials.....6
Tutorial Audience.....6
Style and Presentation.....6
Emphasis and Scope.....7
Tutorial Organization.....7
Omissions and Disclaimers.....8
Omissions.....8
DISCLAIMER OF WARRANTY.....9
Assistive Technology Requirements.....9
TUTORIAL OVERVIEW.....10
CHAPTER 1: COMMUNICATION TECHNOLOGY.....11
Classic Communication.....11
Print Communication.....11
Braille Communication.....12
Audio Communication.....12
Video Communication.....13

Telecommunication 13
Broadcast Communication 13
Telephone Communication 14
Data Communication 16
Online Communication 17
Library Services 17
Books and the APH Database 18
Dictionaries and Reference Works 19
eCards and Gifts 20
Postal Mail and e-Mail 20
Class Notes and Homework Help 21
Community Lists and Chat Rooms 22
Stores and Malls 22
Money Management and Investment 23
Newspapers and eZines 23
Publications and PDF 23
Music and MP3 23
Fun and Games 24
People Finders 24
Hide and Seek 24
Chapter Summary 25
Classic Communication 25
Telecommunication 26
Data Communication 26
Online Communication 27
CHAPTER 2: THE NET AND THE WEB 28
Intranets and Extranets 28
The Internet 29
Internet Benefits 30
The World Wide Web - WWW 32
Multimedia Documents 32
Web Documents 33
Web Browsers 34

Web Pages in Windows XP 35
The World Wide Web Consortium (W3C) 35
Web Benefits 36
Chapter Summary 37
The Net 37
The Web 38
CHAPTER 3: INTERNET CONNECTIONS 40
Connection Considerations 40
Hardware Access 40
Software Access 41
Connection Types 42
Dial-up Connections 42
Broadband Connections 44
Connection Options 46
Free Connections 46
Paid Connections 46
Connection Costs 48
Connections on the Road 48
Connection Providers 49
Find a Local ISP 49
The Sign Up Process 50
The Required Software 51
Connection Wizards 52
Get Ready 52
Run the Wizard 52
Connection Tasks 55
Connect or Disconnect 55
Alter or Update 55
Chapter Summary 56
Connection Types 56
Connection Options 57
Connection Providers 57
Get Connected 57

CHAPTER 4: WEB PAGES AND E-MAIL 58
HyperText - Mere Kid's Play 58
Name That Net Computer 59
Basic Web Site Address Examples 60
More Web Site Address Examples 61
Home Page Examples 62
Web Page Navigation 62
Connect That Document 63
Make That Web Site Accessible 64
Use E-mail on the Net 66
Postal Mail 67
Electronic Mail 68
Email Header 68
Chapter Summary 70

PREFACE

A new technology typically affects a specific industry or group of workers or customers. It is a rarity that an emergent technology affects every industry and virtually every person worldwide. Usually it takes a long time for a technology to spread throughout its sphere of influence. There are 2 recent innovations, however, that violate these patterns: the Net -- a worldwide network of connected computers and the Web -- a global collection of connected multimedia documents. Both of these developments have emerged in the past quarter century and have already influenced every aspect of human endeavor throughout the civilized world.

Now, that a personal computer costs about the same price as a quality television set or high-performance stereo system, an individual can afford a personal computer and can access the Net and the Web any time anywhere. The personal computer has invaded every area of human activity, and its ubiquity has made the Net and the Web commonplace. No other technology has spread throughout the culture as rapidly as the personal computer -- those placed on desktops and those concealed within most appliances -- cell phones, microwaves, cars, medical equipment, and tools of all kinds.

The personal computer, together with the Net and the Web, has altered and enhanced all aspects of culture and human interaction forever. This tutorial, Verbal View of the Net and the Web, presents an overview of this omnipresent technology. You will rely on this technology when you take courses, when you work, when you play, when you communicate with others, and when you visit a library. Additional tutorials from APH about the Net and the Web describe ways to send and receive e-mail on the Net, browse documents on the Web, and much more.

Universal Accessibility

Alan Turing, the founder of computer science, claimed that the computer offers a flexible and universal tool: Alter its programs and create a different tool -- word processor, entertainment system, weather forecast system, braille production system, and so on. Millions of users rely on computers to perform thousands of diverse tasks, and users must interact with computers in many different ways. This flexibility of the user interface means that computers can meet the needs of different user groups: blind users who require alternate means of interaction -- voice output, manufacturers who require hands-off interaction -- voice recognition, and the like.

Net and Web technology also offers universal adaptability and hence can provide disabled users unprecedented accessibility features if developers are

cognizant of user needs. The World Wide Web Consortium (W3C), established in October 1994, promotes the growth and usability of the Net and the Web. W3C has as a goal that every disabled user will have complete and equal access to the Net and the Web as they evolve.

Available Tutorials

APH offers multiple tutorials about the Net and the Web. Every tutorial covers a different topic or computer program in detail. Every user must read this tutorial first, for it presents the concepts and terminology used throughout the other tutorials about the Net and the Web. The most common tasks you perform on the Net and the Web are to read documents on the Web and send and receive e-mail on the Net. So you should read Verbal View of Web Documents and Verbal View of E-mail. Tutorials on these 2 topics are followed by tutorials on optional topics.

Keyboard and keyboard shortcuts are emphasized throughout all tutorials, for many users find the mouse difficult to handle and operate. Tutorials list all keyboard commands.

The visual appearance of the Net and the Web is a principal subject of these tutorials. Various visual techniques are often used together; that is, a program may display at the same time multiple windows that show menus, dialog boxes, and other graphic elements. The various graphic components are verbally described and explained.

Tutorial Audience

These tutorials are written for blind computer users who possess computers (desktops or laptops) that run Windows XP. They teach readers how to connect to the Net, surf the web, send and receive e-mail, and much more. All the essential aspects are explained, and all the essential tools are discussed. No prior knowledge of the Net or of the Web is assumed.

Style and Presentation

There are 2 types of tutorials: descriptive and audio-interactive. The former type is in "textbook" form. You read the material in a preferred format and then practice it. The latter is in "mimic" form. You listen to a cassette tape or an audio CD and attempt to follow the instructor's steps.

These tutorials about the Net and the Web are descriptive in style and are distributed as DAISY books on compact disks. DAISY stands for Digital Audio Information System; this "electronic book" format is accepted worldwide as a

standard form for audio books produced for visually-impaired and blind readers.

Emphasis and Scope

These tutorials are written for blind users who wish to employ the Net and the Web for educational, vocational, and recreational pursuits. A few topics are discussed at length, although omitted from most books, because they greatly benefit blind users.

These tutorials are written for persons who have limited or no access to training centers and must learn independently. They are written for users who want or need to access the Net and the Web primarily with the keyboard. The use of the keyboard is emphasized and summarized throughout. The keyboard and the mouse are compared whenever appropriate so the strengths and weaknesses of both are apparent.

These tutorials err on the side of completeness. They assume that readers know little about the Net and the Web. They also err on the side of simplicity. They omit technical details that readers may never need or care about.

Tutorial Organization

Every chapter is kept as simple as possible. Technical terms are kept to a minimum, for the procedural techniques, fundamental ideas and visual cues are the important things. Needed technical terms aren't used before they are explained; please accept my apology for any mistakes in this regard. Nonessentials are omitted so readers can give full attention to the important material.

Every chapter is kept as short as possible and, as much as possible, independent of other chapters. There is a single topic per chapter so readers can focus on a specific concept or technique. Every chapter is self-contained so the reader can study them separately and never need to flip between chapters in order to find important related material.

Every chapter concludes with a chapter summary. It can serve as a quick overview of the essential material presented throughout the chapter. Read a chapter's summary to decide whether its material is sufficiently familiar or needs to be studied.

Chapters are presented in the order that seems most useful from the beginner's point of view. However, the reader can skip over a chapter or topics in the chapter if the covered material is already familiar. The reader

may need to study another chapter before all the material in the current chapter is completely comprehendible.

Many step-by-step procedures are presented throughout these tutorials that let readers carry out useful or necessary tasks. These procedures are listed by name in the table of contents for ease of reference.

Omissions and Disclaimers

These tutorials presuppose that you already have a good grasp of Windows XP concepts and navigation techniques; consequently, these topics are mentioned only when deemed vital to the material at hand. Please consult the Verbal View of Windows XP tutorial from APH for the complete Windows XP story.

These tutorials introduce you to the Net and the Web and the fundamental concepts found in common programs used on the Net and the Web. Read a tutorial, try out the keystrokes and study the relevant concepts. There are no explicit exercises. Make up your own examples so you will develop your own repertoire of skills.

No attempt is made to present all the ways to do the common tasks. Hopefully, the easiest and most efficient ways for keyboard users to perform the common Net and Web tasks were selected for presentation.

Omissions

Net and Web technology have evolved over the past years and now include thousands of features -- many of which are very specialized. Only features useful to most readers are discussed.

There are features which fail to work properly with current access technology. Features which have major "bugs" and features which aren't usable with a keyboard or with a screen reader aren't discussed.

DISCLAIMER OF WARRANTY

AUTHOR AND DISTRIBUTOR HAVE USED THEIR BEST EFFORTS IN PREPARING these tutorials. AUTHOR AND DISTRIBUTOR MAKE NO REPRESENTATIONS OR WARRANTIES WITH RESPECT TO THE ACCURACY OR COMPLETENESS OF THE CONTENTS OF these tutorials AND SPECIFICALLY DISCLAIM ANY IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. THERE ARE NO WARRANTIES that EXTEND BEYOND THE

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Assistive Technology Requirements

Computer hardware and software that aid the blind in personal, educational and vocational pursuits is commonly called Access Technology or Assistive Technology. Blind users can rely on products that let the computer talk or on products that convert text into Braille.

A program, called a Screen Reader, and hardware, for voice or Braille, together make useful verbal or tactile output possible. A screen reader can announce text and graphic elements as they are displayed. A screen reader provides special keystrokes, called Hot Keys, which let you review displayed text and graphic elements and which let you move the mouse pointer and click the mouse. You must learn to use a screen reader just like any other program. But, facility with a screen reader is vital in order to work comfortably and efficiently.

A screen reader also describes the visually obvious to you. Example: A screen reader will announce the text associated with a logo on a web page and also read the logo's description when present.

You must possess the latest versions of all programs to work most efficiently with the Net and the Web. Install all available updates to Windows XP, Internet Explorer -- the Web browser from Microsoft found in Windows XP, and update to the most recent release of the e-mail program you prefer -- Outlook from Microsoft or Eudora from Qualcomm. Most importantly, make sure that your screen reader supports the current features found on web pages; contact your screen reader vendor for current releases. You will find the Net and the Web to be inhospitable without the latest programs!

TUTORIAL OVERVIEW

This tutorial is divided into 4 chapters. Chapter 1 offers a very brief history of communication and telecommunication to highlight the features that brought

about the Net and the Web. Chapter 2 introduces the Net and the Web and the concepts and terminology you need to understand. Chapter 3 discusses the various ways to connect to the Net and to the Web. Chapter 4 introduces you to web pages and e-mail messages.

CHAPTER 1: COMMUNICATION TECHNOLOGY

The past determines the present, and the present foreshadows the future. This chapter offers a very brief history of communication and telecommunication to highlight the features that brought about the Net and the Web.

There are 3 common ways to communicate. Publish books for others to read; this is classic technology. Broadcast radio and television; this is telecommunication technology. Transmit digitized data over wires; this is online technology.

Many compelling reasons are marshaled to convince you that online communication (the Net and the Web) are tools that, as a visually-impaired citizen, you must embrace to function fully and successfully. Every aspect of your life -- education, work, play, health, travel, personal communication, and even romance -- are now profoundly affected by the Net and the Web. There is no escape! Both the Net and the Web are now used on all 7 continents and on the remotest islands and in the most isolated jungle hideaways. (You are told the difference between the Net and the Web in the next chapter.)

Classic Communication

The term communication means the transfer of information or data between persons or machines via agreed upon conventions called communication protocols. The next few topics offer typical examples of communication methods.

Print Communication

Johann Gutenberg invented moveable type circa 1450; moveable type is like braille scrabble tiles but with print letters instead of braille letters. Print shops in Gutenberg's day laid out trays of moveable type to form pages of print text for duplication. This technology revolution made it possible for the rich, influential, and well-educated to afford a few print books.

Print books made it possible to pass information from generation to generation with reliable "data communication". Print books and other printed publications are still the most ubiquitous media for information

communication; you only need to learn to read to access all the wonders they hold.

Now, thanks to the Net and the Web, you can read and shop online. Example: www.Amazon.com, a huge online store, offers books in print, on audio cassette, and on audio compact disc. (The prefix www stands for "world wide web; the suffix com is short for "company".)

Braille Communication

Retired army captain Charles Barbier de la Serre introduced to Louis Braille circa 1822 the "encryption technology" used by the French army to encode secret messages readable at night in the dark. Louis Braille, at the age of 13, adapted this defunct military technology for the benefit of the blind. This innovation provided an alternative to Gutenberg's technology suitable for blind readers.

This technology revolution made it possible for blind people to have a few accessible books. A favorite book to braille is the Bible; this is why many of the contractions used in the braille code represent many common words found throughout the Bible -- Father, Mother, Lord, Spirit, Rejoice, and so on.

Braille books are still the most valuable media for information communication; you only need to learn to read to access all the wonders they hold. Notice the 4-century lag between print technology and braille technology.

Now, thanks to the Net and the Web, you can browse and shop at an online bookstore that caters to accessible books. Examples: www.BrailleBooks.com offers braille books in embossed format; www.APH.org offers books in various formats -- braille, audio, and so on.

Audio Communication

Hard copy (print and braille) captures the content of oral communication but not the oral communication itself. Thomas Alva Edison announced the invention of the phonograph on November 21, 1877; this device "writes sound" onto a medium. You can retrieve (play back) the stored audio with the proper equipment -- a record player. A phonograph stores a part of you permanently for others to perceive and appreciate. This marvelous technology and its derivatives (tape recorders/players, compact disc recorders/players) are now commonplace.

Video Communication

Audio communication captures how persons and things sound whereas video communication captures how persons and things look. This latter form of communication takes various forms: photographs capture a view at an instant; motion pictures capture continuous events as they occur. Today's movies and videos combine audio and video technology to offer often delightful and sometimes monotonous experiences.

Telecommunication

Telecommunication is communication over a distance -- next door or around the world. Telecommunication includes radio and television networks and telegraph and telephone services. Telecommunication makes the world seem smaller because you can communicate with any person on Earth when you possess the proper equipment.

Broadcast Communication

A broadcast occurs when a transmitter sends a message -- announcement, show, program -- to multiple receivers concurrently. A broadcast system (radio station, television station) permits groups of individuals to receive the very same message at virtually the very same time.

Radio Communication

Do away with "hard copy" communication, and replace it with communication through the ether. Radio is a communication technology that transmits information by radio waves. Multiple listeners are able to receive the same communication -- show, song, or commercial -- and listen concurrently.

The identity of the original inventor of radio, at the time called wireless telegraphy, is controversial. Nikola Tesla gave a public demonstration of radio communication in 1893 in St. Louis, Missouri. But, Guglielmo Marconi was awarded the patent for radio in 1896. The rest, as they say, is history.

A radio station has a limited range. A receiver, a radio, can pick up a radio station only within a prescribed distance as specified by the FCC (federal Communications Commission).

Now, thanks to the Net, you can hear a radio station located anywhere on the planet. A radio broadcast is digitized and transmitted over the Net and converted back to audio format after it reaches your computer. Radio over the Net gives you the opportunity to listen to shows from virtually every country on Earth and listen to talk radio in hundreds of different languages -- what great fun!

TV Communication

Television adds to the medium of radio visual communication; that is, communication is both heard and seen. The development of television technology had many false starts and partial successes. Philo Taylor Farnsworth contemplated a television system at age 14 and, at age 21, demonstrated a functional system in the autumn of 1927 in San Francisco.

The first long distance public television broadcast was from Washington, DC to New York City and occurred on April 7, 1927. The first TV service was WGY, Schenectady, New York inaugurated on May 11, 1928. CBS's New York City station broadcasted the first regular seven days a week television schedule in the US on July 21, 1931. Notice the mere 50 year lag between radio technology and television technology.

Now, thanks to the web, there is Web Cam; a camera takes video of an event and broadcasts it over the Web instantly. Web cam may monitor an event -- sports event, military engagement, you eating breakfast -- continuously so anybody on the Web can watch. This technology raises grave questions of privacy and the possibility of unauthorized surveillance -- big brother may watch you whenever and wherever there is a web cam installed.

Telephone Communication

Alexander Graham Bell worked on telegraph technology and made major improvements. Bell figured out a way to transmit multiple messages concurrently over a single telegraph wire. This breakthrough brought about telephone technology because Bell reasoned that verbal utterances are multiple audio messages. Bell and his assistant, Thomas A. Watson, constructed in 1875 gadgets (early telephones) that could transmit recognizable utterances. This technology revolution, called telephony, offered point-to-point bidirectional communication. That is, this communication method lets you receive and send voice communication concurrently. This ability is so commonplace today you think nothing of its marvelous utility. You would be taken aback if you said "hello" and never received a response.

Bell patented telephone technology in the United States in 1876. Bell and others formed the Bell Telephone Company in July 1877. This company, in 1879, merged with the New England Telephone Company to form the National Bell Telephone Company. They formed, in 1880, the American Bell Telephone Company, and they formed, in 1885, American Telephone and Telegraph Company (AT&T); this giant company, in 1899, consolidated the Baby Bells. (More about AT&T and the Internet a bit later.)

Now, there are video phones -- devices that can receive and send both voice and pictures, and, of course, there are mobile phones -- so you are no longer tethered but can call from anywhere on or off planet.

Online communication over the Net incorporates the ability to transmit multiple messages concurrently in both directions. You can read while online; you can send e-mail while online; and you can transfer files while online. Bell's innovative concepts have come a long way!

Telephones are assigned telephone numbers. You, or your computer, must dial these numbers to make calls. Traditionally, telephone numbers are published in 2 separate lists: the "yellow pages" for businesses and organizations and the "white pages" for residential customers. You must look up a telephone number in either of these 2 lists to call a business or a person. Now, thanks to the Web, you have immediate access to online yellow pages and online white pages. Online telephone pages are more reliable because they are updated quarterly whereas printed pages are updated yearly.

There are also online telephone services. VOIP -- Voice over the Internet Protocol -- technology lets you make phone calls via the Net and bypasses the Baby Bells.

VoIP providers, 8x8 and Vonage, launched VoIP services with much lower phone costs. Thereafter, the telecommunications giants, AT&T, Comcast, and Cablevision, entered this market. More recently, Verizon rolled out its VoIP service called VoiceWing. AT&T announced, in July 2004, it would no longer offer traditional land-line phone services; instead, it would concentrate on its current VoIP service, CallVantage, and other VoIP products. Forrester Research predicts that about 5 million US households will switch to VoIP telephony by 2006. VoIP with unlimited local and unlimited long-distance domestic calls now costs about $35 per month, and prices are sure to drop as more telecommunications firms get into the VoIP business. A good reason to use VoIP telephony is a much smaller monthly phone bill. But, you must have a computer with a Cable or DSL modem to access VoIP. (These kinds of modems are discussed in the next chapter.)

> Remark: VoIP service may not work as reliably as traditional phone service in your area. So check out the available VoIP service carefully before you switch your current phone service. (CallVantage from AT&T does deliver reliable, clear phone service with many useful features, and you can work on your computer and make calls concurrently with no noticeable decrease in computer performance.)

A telephone service based on VOIP offers you greater access to caller information. The phone can announce all incoming information, and you can dictate phone numbers, commands, and ask questions. Typically, VOIP service will cost you less than traditional telephone service -- great for you, not so great for the Baby Bells. VOIP offers you, as a visually-impaired customer, unprecedented access to phone services. (Check with your telephone and online service provider about VOIP availability in your local area.)

Data Communication

The personal computer made its debut in August 1981 from IBM. The term "personal computer" was used as early as 1972, but became a household idiom that summer. Numerous vendors copied the IBM PC and made the personal computer a retail commodity.

> Remark: Big Blue, the creator of the IBM personal computer, as of December 2004 no longer manufactures personal computers.

Microsoft Corporation developed PC DOS for the IBM PC and MS DOS for compatible personal computers. These products, now defunct and thereafter Microsoft Windows, made Microsoft the largest software developer in the world with 50,000+ employees worldwide as of May 2004.

On January 1, 1983, the Department of Defense adopted the TCP/IP communications protocol for connected computers. This event marks the birth of the Internet as used today. Web technology debuted in 1989 when Tim Berners-Lee connected a bunch of documents spread over the Internet so readers could readily access them.

Most developers of access technology focus efforts on the personal computer and Microsoft Windows. Microsoft products dominate the Net and the Web. Virtually every disabled PC user accesses the Net and Web currently with Microsoft's browser, Internet Explorer. (Verbal View of Web Documents offers a tutorial on this web browser.) Now, there is an alternative to this program. The developers of Mozilla provide comparable, and occasionally better, access to the Net and the Web. The screen reader Window-Eyes 5.5 from GW Micro supports both Internet Explorer and Mozilla.

The next 15 years marked rapid growth of the Net and the Web worldwide. They make online communication possible in various ways, and are now unavoidable. The next topic lists a few of the ways you may communicate online.

Online Communication

Net and Web technology has fostered a new form of communication: Online Communication throughout Cyberspace. William Gibson, a science fiction writer, coined the term "cyberspace" in 1986 in Burning Chrome, an anthology of science fiction. Cyberspace forms a different reality within the world's computer networks. You may communicate with another person or computer and never know where that person or computer resides, and you actually don't really care. You only need to know the path through cyberspace that connects both of you.

Library Services

Books (print or braille) are typically gathered up and placed in a central location. Books are borrowed and returned; in this way, books are shared amongst many readers. This traditional view of a library changed radically with the invention of other media for information interchange. Now, a library serves as a repository for books, maps and artworks, microfilm and microfiche, audio tapes and discs, and video tapes and discs. A modern library is a place where you can access information and data in various formats.

A trip to a real library can be a hassle if you are visually impaired. Now, thanks to the Net and the Web, you can visit an online library and just browse titles or request books for delivery. A few common library services available to you as a print-impaired reader are listed below. You can locate many more after you acquire Net and Web navigation skills.

Popular books and magazines are available free of charge from NLS (National Library Service) which is part of the Library of Congress. Requested materials are delivered to you through the USPS (United States Post Office) in your choice of format -- large print, braille, 4-track audio cassette, and eventually in digital format. A list of new titles is sent to you bimonthly on audio cassette. You may fill out a form, call, or go online to request titles for delivery. My favorite genre is detective novels; 5 titles or so make their way to my mailbox weekly. You merely reverse the pre-addressed mail label and put the books back in the mailbox for return. A customized 4-track cassette player is required to read these audio cassettes. NLS will lend you a 4-track cassette player. APH (American Printing House for the Blind) offers a sturdy, never-die 4-track cassette player and recorder, my favorite device for leisure and business tasks.

College and graduate textbooks are available from www.RFBD.org (Recordings for the Blind & Dyslexic). You must pay a one-time 65-dollar signup fee and an annual 35-dollar subscription fee. Requested materials are

delivered to you through the USPS on 4-track audio cassette or on compact discs in a customized digital format. You must read these digitized books on a computer or on a portable digital book reader. You can browse, search, and read digitized books rapidly; eventually all books for the print impaired will come on compact discs or memory cards in digitized format. You may fill out a form, call, or go online to order books for delivery. You merely reverse the pre-addressed mail label and put the books back in the mailbox for return.

My favorite genre is advanced math books; you can send 2 print copies of any textbook to RFB&D, and their professional staff will record the book for you. RFB&D has recorded many of my favorite number theory books. You need either custom book software or a custom book player to read these electronic books. RFB&D will provide software or a player. APH offers a compact, portable digitized book player, called the Book Port, my favorite device for leisure and study tasks. (Verbal View of Online Library Services discusses these topics.)

Books and the APH Database

A book in any other format would still read as well -- sorry Shakespeare! Now, you may read a book in print or braille, on audio cassette or audio disc, or on a computer or portable book reader. You can visit an online bookstore and browse titles or buy books of interest. You can even read newspapers, newsletters, and other periodicals while online. Net and Web technology offers you unprecedented access to information.

You can join a book club for print-impaired readers. www.BookShare.org offers current textbooks for the social sciences, bestsellers, newspapers (local and national), and diverse periodicals. You are free to put any item on a computer or portable book reader and read whenever and wherever you like. You must pay a one-time 25-dollar signup fee and an annual 50-dollar subscription fee. You can read as many items as you like --books, magazines, newspapers, and periodicals.

Samizdat offers no longer copyrighted books -- hundreds of classics and numerous reference works. Books are delivered on compact disc in text format. Books are grouped by topic -- all of Shakespeare's works, books on American history, books about animals, and so on. You can order online at an eBay store or by telephone. BrailleBooks offers hard-copy braille books suitable for kids, teenagers, and adults. Braille gifts are also available: Braille music boxes, buttons, magnets, bookmarks, key chains, calendars, playing cards, and so on. You can order online or by telephone.

The resources presented so far might lead you to the conclusion that there are a lot of online places where accessible books are listed and that accessible materials are available in diverse formats. You're correct on both

accounts. You don't need to hunt for book resources yourself, for they are already compiled as online databases.

APH maintains a comprehensive database of accessible books and other educational materials -- academic tests, braille music, and so on. This database can be found at www.APH.org, and is called Louis. (The suffix org is short for "organization", usually nonprofit.) Louis lists offerings from over 200 groups; presently about 145000 titles are listed. Nightly, between 1:15 AM and 4:15 PM, APH staff maintains and updates Louis.

The books that APH produces are K-12 level textbooks. Other educational materials and products from APH cover all ages and academic levels. RFB&D offers college and graduate level textbooks.

Louis lets you specify the medium you prefer and other key data about a book and then goes to work. The result of your search lists all titles that meet your criteria and tells you where you can borrow or buy items of interest. You can also look up information about braille music, tactile graphics, and the description and price of all products manufactured by APH.

Louis is available to the public. No subscription is required; access to Louis is free of charge. You don't need to be a student or teacher to use and enjoy the Louis database. APH intends Louis to benefit all, but access to the APH File Repository to download electronic books requires you to be a registered user. (You must pay for every book you download.) You meet Louis (and RFB&D) in a subsequent chapter and learn ways to search for that book you wanted to read.

Dictionaries and Reference Works

A dictionary lets you look up definitions for and origins of words. A thesaurus lets you look up synonyms and antonyms for words. An encyclopedia lets you browse articles on diverse topics. A directory lets you locate a manufacturer, vacation spot, and more. A catalogue lets you read about products or services. Now, thanks to the Net and the Web, you have immediate access to many online reference materials. Most reference providers charge modest annual fees or usage fees; there are, however, many quality reference services you can access freely. (Wikipedia, a free encyclopedia, provided many of the facts used in this chapter.)

> NOTE: Wikipedia is not a reliable information source. The main page of this website states that ANYONE can edit the articles contained therein. It is the conclusion of many users that a lot of misinformation can be spread in this manner.

Newspapers and Newsletters

Millions of readers receive newspapers daily and newsletters monthly by mail. These materials may arrive in print or braille or on tape or on compact disc. Now, thanks to the Net and the Web, you can instead receive electronic newspapers and newsletters right away by e-mail. You can read the New York Times or the local rag online.

eCards and Gifts

Another form of communication is cards, sent on important occasions. Typically, a trip to the card store is required. A card with an appropriate sentiment is selected and then mailed. This process can be a hassle if you are visually impaired. Now, thanks to the Net and the Web, you can visit an online card and gift shop and browse. An e-card may have a text message, a picture, and music ideal for the occasion.

Postal Mail and e-Mail

The most common form of communication is a letter delivered by mail. Typically, a trip to the nearby mailbox or local post office is required. You must affix a stamp of the correct amount and write the delivery address. This process can be a hassle if you are visually impaired. Now, thanks to the Net and the Web, you can type, address, and e-mail a letter to anybody who has an e-mail address in a matter of moments. Example: My formal communications about this tutorial are accomplished with e-mail. Chapters are e-mailed as e-mail attachments for review, and invoices are e-mailed for payment.

The most common activity on the Net is billions of e-mails sent and received daily. Many users have multiple e-mails -- an e-mail for home, another at work, and, perhaps, another for private communication.

Many folks (my wife among them) now rely on e-mail instead of the phone because they can forward the same message to all of their friends at the same time, and because they can attach recipes, photos, and even cartoons to an e-mail message for all recipients to enjoy. Many businesses rely on e-mail instead of faxes and postal mail because they can attach documents to e-mail messages and have them received by customers usually in minutes. (Verbal View of E-mail includes tutorials on Outlook Express and Eudora, the 2 most popular e-mail programs.)

Class Notes and Homework Help

Traditionally, teachers and professors lectured and students franticly took copious notes. This process is a hassle if you are visually impaired -- you can't braille fast enough to keep up or you generate hours of audio cassettes to review. This problem is no more! Now, thanks to the Net and the Web, most teachers and professors place complete class materials online for ready access and review. So, relax and enjoy the lecture.

Many colleges presently let you register for courses online and offer undergraduate courses online for degree credit. This trend will continue as more and more educational institutions integrate the Net and the Web into all aspects of campus life. (MIT will offer all its undergraduate courses online by the end of this decade.)

Homework help is available from many online sources. You can e-mail www.MathForum.org with math problems; read articles about math at www.PlanetMath.org; and a blind mathematician has advanced math topics at www.Math/Reference.com, which is set up for screen reader users. You can ask a computer geek a question at www.GeekRescue.com.

There is a homework resource for just about any topic under the sun. Example: You can ask questions about the sun's energy production for a meteorology course at www.StudentQuestions.com.

> Remark: A web address usually begins with the prefix www and usually ends with a suffix that indicates the kind of group you contacted: gov means a governmental agency; com means a commercial enterprise; org means typically a nonprofit organization; and so on. More about this nomenclature in part 2 of this tutorial.

Community Lists and Chat Rooms

A mail list is a convenient way to keep a bunch of like-minded folks in touch. Every person on the mail list is sent announcements, newsletters, and so on to keep them informed.

Now, thanks to the Net and the Web, there are e-mail lists. Every person that belongs to an e-mail list receives messages as soon as they are posted to that mail list, and every list subscriber can post personal messages to that mail list for all the other members to read. E-mail lists are 2-way; that is, you can receive and send messages. There are over a hundred e-mail lists on topics of concern to the visually impaired. They discuss how to find romance and love, how to use Microsoft Windows, what new products talk, and much more. I belong to 50+ e-mail lists, and I gleaned many of the tidbits in this tutorial from messages posted on these e-mail lists.

A chat room is a hangout in cyberspace where folks can chat, gossip, and generally have a good time together. Activity in a chat room is swift, and multiple members send and receive messages concurrently. This frenetic communication is very difficult to follow when a screen reader is used, and a chat room built on java lacks minimal accessibility. There are a few chat programs that do offer a modicum of access to chat rooms. These observations indicate that parts of the Net and the Web currently lack accessibility; there are, however, many groups dedicated to eventual total access.

Stores and Malls

A trip to a real store or mall can be a hassle or impossible if you are visually impaired or live in a rural community. Now, thanks to the Web, you can shop online at a store or mall in cyberspace and buy products and have them delivered to you. There are many accessible online stores, and there are many that lack minimal access. Examples: www.PriceLine.com, a popular discount service, fails to meet federal accessibility guidelines, and so does www.Ramada.com, a hotel chain. Attorney General Eliot Spitzer of New York announced on August 19, 2004 an agreement by both groups to make their web sites accessible by end of year. Yes, there are state and federal laws that mandate accessibility. (Verbal View of eCommerce discusses these topics.)

Money Management and Investment

You probably have checking, savings, and other accounts at a local bank. The larger financial institutions may offer bank statements either in large print or in braille. But, bank statements don't let you monitor financial activity on a daily basis. Thanks to the bank's Extranet (discussed in the next chapter), you can go online and review account activity, transfer funds between accounts, and much more.

You may own, or wish to own stock. Accessible online investment services do exist, and many visually-impaired investors now participate in the global economy via the Net and the Web.

Newspapers and eZines

Most newspapers and magazines publish online as well as by direct delivery to your door. You can read the New York Times, Business Week, and much more online. Many local papers also publish online. My local rag The Citizen News places the entire paper online -- police reports, city council

proceedings, editorials, letters to the editor, and ads from local merchants. Often, I post letters to the editor and read in the next issue responses from neighbors. (Verbal View of Web Documents discusses e-news and eZines.)

Publications and PDF

Millions of documents are published weekly on the Web. Millions of users with different word processors and diverse printers wish to read and/or print documents of personal interest. There is a Portable Document Format called PDF (invented by Adobe Systems) that makes document publication possible and seamless -- it doesn't matter what word processors and printers are used. Most documents from the federal government and local governments are routinely published this way. (Verbal View of PDF Documents discusses programs that let you read and print documents distributed in PDF.)

Music and MP3

The music industry stores audio on vinyl records, cassette tapes, and compact discs in "analog" format. The computer industry, on the other hand, stores files on floppy disks, hard disks, and compact disks in "digital" format. It is necessary to convert between these 2 formats to store audio on the Net and play audio on computers. MPEG (Moving Picture Experts Group) developed a standard way to convert between these 2 formats. MP3 (MPEG Audio Layer 3) emerged in 1995 as the de facto standard for audio in digital format. Now, virtually all audio files placed on the Net and played on personal computers have this format, and you need an MP3 player to listen to these audio files. (Verbal View of Multimedia discusses online audio services and MP3 players.)

Fun and Games

You can play as well as work on the Net and the Web. There are accessible games you can download and play on your computer. There are community games you can play online with other folks -- GW Micro hosts an online poker tournament for users of screen readers.

Resources for games are listed in this tutorial. Many are free, and others are inexpensive. Have fun online!

People Finders

You may wish to look up your former college roommate or a friend from long ago. You are in luck if they have e-mail addresses or telephone numbers! Katy Couric, on the Today Show, interviewed a couple who were teenage sweethearts 60 years ago and who were recently reunited on the Net.

Hide and Seek

You'll learn in the next chapter that the Net consists of tens of thousands of interconnected computers -- personal, corporate, and government -- scattered over the world. You will also learn that there are millions of documents on the Web (composed of billions of Web Pages) and thousands of documents added daily to the Web. You may wonder how you can ever find what you need in cyberspace.

You search for it of course! More precisely, you rely on a "search engine" that searches the Web for you. You tell the search engine what you wish to find; the search engine scans all relevant web pages and lists those of interest.

Google is the most used search engine today because of it speed -- it can scan billions of web pages in moments -- and because it is so simple to learn. Google also offers many handy features. Example: You can make Google work as a reverse telephone directory; that is, you can type a friend's telephone number and get back your friend's address.

Google is a play on the word googol used in mathematics to mean the number 1 followed by 100 zeros -- a very big number indeed. The company wishes to organize all the web pages available on the Net -- another truly big number.

On September 7, 1998, Google Inc., opened its office in Menlo Park, California. Now, the founders, Larry Page and Sergey Brin, are billionaires. (Verbal View of Web Searches discusses search techniques in detail.

Chapter Summary

This chapter offers you a very brief history of communication and telecommunication to highlight the features that brought about the Net and the Web. There are 3 common ways to communicate. Publish books for others to read; this is classic technology. Broadcast radio and television; this is telecommunication technology. Transmit digitized data over wires; this is online technology.

This chapter offers many compelling reasons to convince you that online communication (the Net and the Web) are tools that, as a visually-impaired citizen, you must embrace to function fully and successfully. Every aspect of your life -- education, work, play, health, travel, personal communication, and even romance -- are now profoundly affected by the Net and the Web. Both the Net and the Web are now used on all 7 continents. (You are told the difference between the Net and the Web in the next chapter.)

Classic Communication

The term communication means the transfer of information or data between persons or machines via agreed upon conventions called communication protocols. Books (print and braille) were the only communication media for about 4 hundred years. Authors wrote books, and readers read them; this is 1-way communication.

Hard copy (print and braille) captures the content of oral communication but not the oral communication itself. Thomas Alva Edison announced the invention of the phonograph on November 21, 1877; this device "writes sound" onto a medium. You can retrieve (play back) the stored audio with the proper equipment -- a record player. A phonograph stores a part of you permanently for others to perceive and appreciate. This marvelous technology and its derivatives (tape recorders/players, compact disc recorders/players) are now commonplace.

Audio communication captures how persons and things sound whereas video communication captures how persons and things look. This latter form of communication takes various forms: photographs capture a view at an instant; motion pictures capture continuous events as they occur.

Telecommunication

Telecommunication is communication over a distance -- next door or around the world. Telecommunication includes radio and television networks and telegraph and telephone services. Telecommunication makes the world seem smaller because you can communicate with any person on Earth when you possess the proper equipment.

Data Communication

The personal computer made its debut in August 1981 from IBM. The term "personal computer" was used as early as 1972, but became a household idiom that summer. Numerous vendors copied the IBM PC and made the personal computer a retail commodity.

Microsoft Corporation developed PC DOS for the IBM PC and MS DOS for compatible personal computers. These products, now defunct, and thereafter Microsoft Windows made Microsoft the largest software developer in the world with 50,000+ employees worldwide as of May 2004.

On January 1, 1983, the Department of Defense adopted the TCP/IP communications protocol for connected computers. This event marks the birth of the Internet as used today. Web technology debuted in 1989 when

Tim Berners-Lee connected a bunch of documents spread over the Internet so readers could readily access them.

Most developers of access technology focus efforts on the personal computer and Microsoft Windows. Microsoft products dominate the Net and the Web. Virtually every disabled PC user accesses the Net and Web with Microsoft's Internet Explorer program. (Verbal View of Web Documents offers a tutorial on this web browser.) There are alternatives to this program, but developers haven't provided even minimal access. (The developers of Mozilla will provide access comparable to Internet Explorer in 2006.)

The next 15 years marked rapid growth of the Net and the Web worldwide. They make online communication in various ways possible and now unavoidable.

Online Communication

Net and Web technology has fostered a new form of communication: Online Communication. This technology offers you, as a visually-impaired user, unprecedented access to products and services, educational and vocational prospects, and much, much more. This tutorial tells you what you must learn to become an efficient cybercitizen.

CHAPTER 2: THE NET AND THE WEB

This chapter offers a brief overview of the Net and the Web; these 2 communication tools are as revolutionary as telephone service and broadcast systems, radio and television. Net technology enhances the way you communicate with others; Web technology enriches document content and permits rapid document distribution. Communication technology changed forever because of 2 major developments: computer networks and personal computers.

Computers connected together are called a Computer Network. Computers on a network can share data, programs, and peripherals. A home network may have just 2 computers and share 1 printer; a business network may have many computers and many shared devices -- printers, scanners, and so on.

The personal computer made its debut in August 1981 from IBM. The term "personal computer" was used as early as 1972, but became a household idiom that summer. Numerous vendors copied the IBM PC and made the personal computer a retail commodity.

Intranets and Extranets

Businesses, colleges, governments, and most other folks have figured out that computer networks are handy and very affordable. Most organizations that serve the public run 2 computer networks. Employees and staff use an intranet (inside network) to communicate amongst themselves. Customers, clients, and citizens use an extranet (external network) to communicate with the folks on the inside. You rely on an extranet when you connect with your bank and check your accounts; you rely on an extranet when you shop online at a favorite retailer; and you rely on an extranet when you retrieve forms from local or federal governmental services.

Networks owned by most groups are private, and only authorized persons are allowed to connect to these networks. Other networks are public, and permit you to connect your PC to them.

The Internet

The most famous and most expansive network is the Net -- a worldwide network of networks. This global network, often just called the Net, includes networks operated by governmental and public institutions, networks used by non-profit organizations, and networks owned by corporations. This gigantic interconnected collection of computers forms a worldwide communications system, and it is often called Cyberspace. This vast network links individuals, institutions, corporations, and governments wherever computers are used. This network of interlinked computers, unlike radio or television networks, permits 2-way communication. Users receive messages and can send back responses to anybody or any computer on the net.

The core networks that comprise the Net were establish by the US Department of Defense (DOD) in 1969 as a cold war project, called the ARPANET (Advanced Research Projects Agency Net). ARPANET linked essential university research groups and defense installations around the country. Nerds, who developed the ARPANET, used decentralized networks, queuing theory, and packet switching technology. A lot of the techno-babble used by Net developers still haunts the Net. Only the most necessary terms are used in this book, and you are spared all the glorious but unnecessary details on Net architecture.

January 1, 1983 marks the date when the ARPANET changed its core communication protocols from NCP to TCP/IP. This started the Net as it exists today. National Science Foundation (NSF) built another piece of the Net in 1986; NSFNet linked most major educational institutions together.

Nobody, no single group, and no single country control the Net and its growth. Generally agreed upon communication protocols hold the pieces of the Net together and allow it to grow wildly, rapidly, and without central control. These protocols are established by the Internet Engineering Task Force (IETF). Occasionally, a proprietary protocol gains sufficient popularity and the Net adopts it as a whole.

There is no big brother who oversees the Net and its users. Net technology continuously evolves; Therefore, this book has a very short half-life, but it tells you how and where to find the latest and greatest innovations on the Net.

You aren't allowed to connect your computer directly to the Net. You must rely on an Internet Service Provider (ISP) to connect you. Now, just about every phone and cable company offers Internet connections and many other businesses do as well. You need 3 things to access the Net:

You must have a modem and a connection set up by an ISP. The modem converts "computer data" into "phone or cable data" so your computer and the Net can converse properly.

You must have a username and a password given to you by your ISP. You identify yourself to your ISP with these data.

You must rely on a piece of software that lets you browse (surf) the Net. Internet Explorer is the browser that comes with Microsoft Windows XP; this browser is the most used at the present time. (Verbal View of Web Documents offers a tutorial on this browser.)

The ways to connect to the Net and the Web are discussed in 2 chapters. Chapter 3 discusses ways to find an ISP that best meets your needs. Chapter 4 discusses common ways to connect your computer to the Net and the Web.

Internet Benefits

Communications on the Net -- electronic mail, audio, video and so on -- can reach individuals or groups almost instantaneously. Communications are automatically routed past "broken connections" so electronic mail and other information reach the proper recipients in spite of problems on the Net. There is no central communications center; every network handles its own communications and connections to other parts of the Net.

Communication on the Net is often the cheapest way to disseminate information -- much cheaper than phone calls, printed brochures, and the like. Any person or group can place data on the Net so folks, day or night, can access that information; the Net has become the place to look for weather announcements, school closings, news breaks, movie and TV listings, sport scores, phone numbers, postal addresses, and personal ads.

A beneficial feature of the Net is its ability to update software, books, and time-sensitive information quickly and frequently. Here are 3 common examples of this. Windows XP from Microsoft consists of hundreds of programs, and many of these programs are often enhanced or updated. Microsoft provides these updates to its customers free of charge on the Net. Now, many book publishers provide corrections and additional material for books on the Net. Readers just download the new pages and read or print them. A perspective house purchaser, in the olden days about 5 years ago, was forced to travel house to house in search of the right abode. Now, a house hunter goes on the Net and looks at all the available houses in the preferred neighborhood at the desired price. Availability and prices are current because the real estate data are updated daily or weekly.

You can also find and buy software on the Net. Free software, called freeware, is abundant, and often as good as pricey programs. Very inexpensive software, often called shareware, rivals products from major software producers. You are told how and where to locate programs to meet your personal needs.

You can access a vast wealth of information on the Net -- online encyclopedias and dictionaries, tens of thousands of books, millions of musical and other audio works, and much more. But, the Net offers even more immediate services. You can send electronic mail (alias e-mail) to anybody who is also signed up on the Net. Now, hundreds of millions of e-mail messages are sent daily to tens of millions of persons around the world. A new industry has grown up around e-mail -- junk e-mail that fills up peoples' online mailboxes weekly. Another service, Instant Messenger, is for people who can't even wait for an e-mail response. This service lets you communicate directly with another person while both of you are on the Net.

Products and services offered on the Net are especially beneficial for disabled users. People who lack mobility or who live in rural areas can have more of a social life -- play Games with others day or night, chat with friends or strangers day or night and download music or video to entertain them at any time.

You can rely on the Net to find local entertainment events, clubs to join, places of worship, and restaurants of all types and price ranges. Monthly, I check out comedy clubs at Access Atlanta on the Net.

You only need to learn about e-mail and the Web to access most of the data and services found on the Net. You can learn about other topics for fun and personal growth at your leisure.

Nobody, no group, and no country can discriminate against you on the Net. Net access is available to all -- young and old, poor or rich, rural or city. There are groups and laws that ensure that the Net is accessible to all. Net technology embraces folks of all races, creeds, and life styles worldwide. It is hoped that this book gives you the tools to join and participate in the global Net community.

The World Wide Web - WWW

A book is the most common way to gather information, even today. Book format and content has changed dramatically over the last few decades; Johann Gutenberg and Louis Braille, no doubt, would marvel at the recent

innovations. A brief digression about books for kids will help illustrate the concepts of Web Page, Web Site, and Multimedia Document.

Multimedia Documents

The popup book is the rage among toddlers today. A house or animal cutout may pop up when a page is turned. This is animation at its simplest. A flower fragrance or dirt odor may waft off a page when a "smell patch" is scratched -- a great kid delight. A bird may chirp or a lion roar when a "sound strip" is scratched. This is audio at its simplest. A patch may feel rough, smooth, or possess texture.

A popup book offers multimedia experiences -- text, audio, video, and even odors. Book elements on different pages are "linked" together to form the book.

A document on the Net, likewise, can offer a reader a multimedia experience. Example: You may read a biography (text format) about your favorite composer; you may have a music sample played (audio format); and you may look at a picture of the composer (video format). Elements are "linked" together to form an online document. The bits and pieces that make up an online document form a "web" of interconnected parts; the totality of linked parts forms a "web page"; a bunch of related documents (web pages) forms a Web Site. An online retail catalogue is a typical example of a web site composed of many web pages. The creator of a web site can include multimedia clips to encourage you to buy a product -- a picture of a radio that plays a rock and roll tune when activated; a picture of a DVD that shows a dance routine when activated; or a manikin you can dress with clothes you may wish to check out before you buy.

The parts of a popup book are all in the same physical place, bound together. But, the parts of an online document, web pages, are often scattered throughout the Net -- a music clip may reside on a computer at the Library of Congress; the composer's biography may reside on a computer at a university in a different country. You don't care where the individual parts are physically located; you only need to know the path in cyberspace that connects them together.

Web Documents

Web technology originated at CERN, Europe's center of pure research near Geneva. Tim Berners-Lee and Robert Cailliau in 1989 collaborated on a project for researchers to share and link documents across the computers at CERN. Tim Berners-Lee published a proposal for the World Wide Web on November 12, 1990 and wrote the first web page a day later. Web and www are short for World Wide Web.

Berners-Lee used HyperText and Transfer Protocol technology to create a web of documents that readers could browse any way they wished. The prefix http comes from this process. (You don't need to worry about hypertext or the transfer protocol; you only need to notice this prefix when it occurs. Now, most web designers drop this prefix and only use the www prefix to specify the Web.

A typical book (print or braille) has a table of contents; it organizes parts of the book at different levels -- chapter, section, and so on. A document on the Web doesn't necessarily rely on this kind of structure. Rather, web technology permits parts of documents and whole documents to be connected in many different ways. This flexible interconnection permits readers to flit from part to part or from document to document in search of the desired material. You don't need to worry about any of this! You only need to learn how and where to find and read documents on the Web.

Most folks think of the Net as web addresses (www.WhiteHouse.gov, www.Amazon.com), and, indeed, this is the most useful part of the Net for most people. Web technology came after Net technology and deals with documents and the best way to interconnect them so readers can quickly find related stuff.

There are 2 very good reasons to use the Net: the ability to communicate instantly with any entity on the Net and the ability to share instantly documents of all kinds. Net users usually communicate via e-mail, and usually read documents via a web browser.

Documents are stored on individual computers on the Net and are assigned card catalog addresses. These addresses, recognized by their www prefixes, let all Net users quickly and easily find documents of interest -- whether on a computer located across town or on a computer located in another country. Many documents are linked together so Net users are able to find related documents located on the same computer or on different computers. Links are "reference tags" that lead to parts of documents and to other documents on the Net. All the documents on the Net form a "web" of documents where links are the "threads" that join them all together.

This worldwide web of documents forms a vast library. This library, like most public libraries, offers magazines and books to read, audios to enjoy and videos to watch. Example: You may read an article about a composer that contains links to that composer's works performed by orchestras in different countries. You activate the links in that article to hear the pieces discussed in that article. The ability to link text with audio and video clips makes the worldwide web of documents a powerful educational and commercial tool.

Most businesses have web sites on the Net where you can browse their catalogs and purchase their products. Most state and federal governmental departments have web sites on the Net where you can look up data and download forms that you can print, fill out, and return. Most TV shows and radio stations also have web sites on the Net where you can read about your favorite TV and radio personalities, enter contests and much more. Even grocery stores have web sites on the Net where you can enter your shopping list, and, often before you can count your money, a delivery van is at your door with your grocery order.

Web Browsers

A program on your computer, called a Web Browser, lets you read documents stored on the Net. A browser interprets hypertext documents and displays them on your computer. CERN researchers developed a web browser that reads lines of text.

Marc Andreessen developed Mosaic in 1993 at the National Center for Supercomputing Applications (NCSA) located at the University of Illinois at Urbana Champaign. This web browser popularized the Web because it combined text and graphics to the delight of novice Net users and because it made Web navigation intuitive.

Marc Andreessen and Jim Clark founded Mosaic Communications on April 4, 1994 and later renamed this company Netscape Communications. Most surfers used the Netscape program to browse the Web. This changed when Microsoft released Windows 95 in August 1995 with its own web browser installed called Internet Explorer.

Internet Explorer, a free program, gained market share quickly and soon dominated the Web.

Netscape Communications in January 1998 released a free version of its web browser and merged with America Online (AOL) --but too little too late. AOL abandoned this browser in July 2003 for lack of market share. Now, this browser goes by the name Mozilla, and its developers intend to make it accessible in 2005 to screen reader users and users who rely on other forms of adaptive equipment.

Internet Explorer is the Web Browser bundled with Microsoft Windows XP. This program lets you go to any computer on the Net and check out its offerings.

Web Pages in Windows XP

Web pages are no longer just on the Net. Microsoft has integrated its web browser, Internet Explorer, into Windows XP, and web pages and links are used throughout Windows XP. You access web pages in Windows XP the same way you access them on the Web. (More about web page navigation later in this tutorial.)

The World Wide Web Consortium (W3C)

W3C, established in October 1994, promotes the growth and usability of the World Wide Web. This organization develops specifications, guidelines, software, and tools to guide Web evolution. Today, W3C has about 450 member organizations and about 70 full-time staff from all over the globe.

The goals of the W3C ensure that you, as a visually-impaired user, will have complete access to the Web as Web technology evolves. There are 2 goals of direct importance to you.

Universal Access: Make the Web accessible to all users around the world. Promote Web technology that respects cultural differences, native languages, educational levels, material resources, and physical limitations of users. Interoperability: Make the Web usable with display screens, voice synthesizers, braille displays, and so on.

"The power of the Web is in its universality. Access by everyone regardless of disability is an essential aspect." -- Tim Berners-Lee, W3C Director and inventor of the World Wide Web.

WAI (Web Accessibility Initiative), part of the W3C, promotes accessibility of the Web by disabled users. WAI oversees Web technology and Web specifications to ensure continued access to the Web by all users as inventors, entrepreneurs, and scientists improve and advance Web content. You, as a Web user, have the opportunity to contact the WAI with recommendations, and the WAI publishes, from time to time, guidelines for Web accessibility for public comment. Be an active Net citizen and participate in this process!

Most developers of web sites are unaware of the needs of disabled users. W3C has "validation tools" that let developers check that their web sites conform to recommended access guidelines. You will come across web sites as you travel the Web that aren't very accessible. You should inform the web master of that web site about WAI and its validation tools.

Web Benefits

Web technology, unlike other Net services, offers multimedia documents and permits broadcasts of news events, sports events, and live concerts. Online radio offers you the opportunity to enjoy broadcasts from most parts of the globe and in many different languages. You can listen to music online and even buy your favorite tunes and put them on your computer for later enjoyment.

Many web sites hold data for the public. You can read Supreme Court decisions; you can find recipes and look up nutrition tips; and you can read board of health reports about local restaurants.

You can place your resume on job sites; you can place personal ads on web sites devoted to romance and love; and you can sell all of your junk or treasures on auction sites. You can check out the current weather stats for any major city; you can look up the currency exchange rate for the dollar; and you can look up mortgage rates.

Communication on the Net and the Web can bring people together: Eddie Timanus, a blind sportswriter for USA Today, frequents the Net and the Web for work and pleasure. Eddie, an undefeated champion on Jeopardy (October 19, 1999), visits the www.tvGameShows.com web site often. Eddie also has chats online with other game show enthusiasts. Eddie met his wife, another game show lover, online in a chat room for gamers.

Here is a synopsis of the Net and Web resources mentioned in Chapter 1:

- Library Services
- Dictionaries and Reference Works
- Books and the APH Database
- eCards and Gifts
- e-Mail and Instant Messages
- Class Notes and Homework Help
- Community Lists and Chat Rooms
- Stores and Malls
- Money Management and Investment
- Newspapers and eZines
- Publications and PDF
- Music and MP3

- Fun and Games
- People Finders
- Hide and Seek

You will discover personal online delights as you investigate the Net and browse the Web. I spend my leisure time at MathTrek, MathLand, and MathForum where math nerds hang out and discuss prime numbers for fun.

Chapter Summary

This chapter offers a brief overview of the Net and the Web; these 2 communication tools are as revolutionary as telephone service and broadcast systems, radio and television. Net technology enhances the way you communicate with others; Web technology enriches document content and permits rapid document distribution.

Nobody, no group, and no country control the Net and the Web! Every person with a computer has equal access to both -- democracy at its best. There is no discrimination on the Net and the Web. Access to both is available to all -- young and old, poor or rich, rural or city. This dual technology embraces folks of all races, creeds, and life styles worldwide. There are groups and laws that ensure that the Net and the Web are accessible to all. It is hoped that this book gives you the tools to join and participate in the global community.

The Net

Communication technology changed forever because of 2 major developments: computer networks and personal computers.

Multiple computers connected together are called a Computer Network. Communications on a network are automatically routed passed "broken connections" so electronic mail and other information reach the proper recipients in spite of problems on the network. The core networks that comprise the Internet (Net for short) were establish by the US Department of Defense (DOD) in 1969 as a cold war project, called the ARPANET (Advanced Research Projects Agency Net). ARPANET linked essential university research groups and defense installations around the country. January 1, 1983 marks the date when the ARPANET changed its core communication protocols; this started the Internet as it exists today.

The personal computer made its debut in August 1981 from IBM. The term "personal computer" was used as early as 1972, but became a household

idiom that summer. Numerous vendors copied the IBM PC and made the personal computer a retail commodity.

Personal computers permit individuals to connect to the Net from home or work and at the local library or coffee shop. This marriage of networks and personal computers fosters hitherto unimaginable instant global communication available to all.

The Web

Web technology originated at CERN, Europe's center of pure research near Geneva. Tim Berners-Lee and Robert Cailliau in 1989 collaborated on a project for researchers to share and link documents across the computers at CERN. Tim Berners-Lee published a proposal for the World Wide Web on November 12, 1990 and wrote the first web page a day later. Web and www are short for World Wide Web.

Most folks think of the Net as web addresses (www.WhiteHouse.gov, www.Amazon.com), and, indeed, this is the most useful part of the Net for most people. Web technology came after Net technology and deals with documents and the best way to interconnect them so readers can quickly find related stuff.

Documents are stored on the Net and are assigned web addresses that let you quickly and easily find them. Documents are linked together so you are able to find related material located on the Net.

Links in documents lead to other documents on the Net. All the documents on the Net form a "web" of documents where links are the "threads" that join them all together. The ability to link text with audio and video clips makes the worldwide web of documents a powerful educational and commercial tool.

The World Wide Web Consortium (W3C), established in October 1994, promotes the growth and usability of the World Wide Web. This organization develops specifications, guidelines, software, and tools to guide Web evolution. WAI (Web Accessibility Initiative), part of the W3C, promotes accessibility of the Web by disabled users. WAI oversees Web technology and Web specifications to ensure continued access to the Web by all users as inventors, entrepreneurs, and scientists improve and advance Web content. You, as a Web user, have the opportunity to contact the WAI with recommendations, and the WAI publishes, from time to time, guidelines for Web accessibility for public comment. Be an active Net citizen and participate in this process!

CHAPTER 3: INTERNET CONNECTIONS

You aren't allowed to connect your PC directly to the Internet. You must rely on an Internet Service Provider (ISP) to connect you. Now, just about every telephone and TV cable company offers Internet connections and many other businesses do as well. This chapter tells you about them and describes different connection options.

Connection Considerations

You connect to networks daily. You connect to the electric network whenever you plug an appliance into a wall outlet; it's that simple. The cable television network requires a bit more expertise; typically, a "cable guy" comes to your place and hooks up as many TV sets as you like to the television network. Thereafter, you only need to turn a TV set on to access the TV network.

The purchase of the proper equipment makes life and network connection more convenient and intuitive. You simplify TV hook up when you buy a "Cable Ready" television set; otherwise, you probably need a "cable box" and more effort to make the connection. Likewise, you simplify PC hook up when you buy a "Net Ready" personal computer; otherwise, you probably need a "black box" with complicated gadgets to make the connection.

Almost any personal computer with sufficient disk and temporary memory will do for minimal Net connection; however, unless you have a friend or coworker who is a computer geek to help you, it will take lots of time and possibly money to make it work. You, no doubt, will hate that PC after you do get online and find out that it creeps along at a snail's pace. Buy the proper equipment; you will recoup the extra cost with lower connect times and charges in a few months. (Using an ancient PC will frustrate you as much as using an ancient black and white TV without cable hookup.) New computers come with Net software and hardware already installed and are configured for the latest in Net and Web technology. If you insist, you can upgrade an old PC to do the job; however, labor costs will eat you alive, and the result will likely be a buggy and unreliable Net connection.

Hardware Access

You can connect a computer to the Net via a phone cable; you plug the computer into a phone jack just like a phone. This is the most common way to get connected. A new Net/Web ready computer may automatically want to

connect you to an ISP when you turn that computer on or when you run an Internet program. The computer will offer to call an ISP and set up an account for you. Don't make that call until you read the rest of this chapter. There are options you should consider before you make a commitment.

A phone connection (alias dial-up connection) is sufficient when you mostly wish to browse the Net and Web and read books, newspapers, and the like. It is pathetically slow if you want to listen to audio or watch video while online or wish to retrieve (alias download) multimedia files or programs off the Net and Web. Many users start out with a slow dial-up connection and then they upgrade to a faster connect method when their needs grow.

A faster way to communicate with the Net is via a "broadband" connection which is a high-speed connection. A local cable or telephone company technician brings mysterious equipment to your place and sets up a high-speed connection for you. Thereafter, you only need to turn your computer on to get connected. Ask your cable company if it offers cable modem Internet access, or ask your phone company if it offers something called DSL (short for Digital Subscriber Line). Compare prices, contract terms, and pick the service plan with the minimal term, for you may wish to switch providers later when prices drop or service fails to meet your needs.

Software Access

All personal computers aren't created equal. They may run Microsoft Windows, Mac OS, or Linux. Microsoft Windows offers the most comprehensive accessibility in general and for the Net and the Web. Apple Corporation this year (2004) commenced development of a screen reader for Macintosh computers. Computers that run Linux (a descendent of UNIX developed by Bell Labs) offer primitive screen reader support. You are advised to rely on a desktop or laptop computer that runs Microsoft Windows XP.

Windows XP is the current version of Microsoft Windows and replaces all previous versions. It has a New Connection wizard that creates a Net connection for you, and it has a Dial-up program that connects and disconnects you to the net. Moreover, it comes with Outlook Express, an e-mail program, and Internet Explorer, a web browser.

Internet Explorer has Microsoft Active Accessibility (MSAA) that supports screen readers. No other web browser -- Netscape Navigator, MyIE2, Opera -- has MSAA support, as of November 2004. (Mozilla, a descendent of Netscape Navigator, will offer MSAA support in 2005.) This book, therefore, only offers a tutorial for Internet Explorer.

You should get a PC that runs Microsoft Windows XP, either Home or Professional. You must keep Windows XP and Internet Explorer current to achieve the best access to the Net and the Web and to avoid security breaches. You can request free updates for Windows XP and Internet Explorer from Microsoft Customer Services. Also, request the current Security Updates for Windows XP. Call 800-642-7676; you receive these free updates on CD within 10 business days.

You must have the most recent release of your screen reader to have the best access to Internet Explorer. Developers include access and security functions compatible with the most recent releases of Windows XP and Internet Explorer. A prior release of a screen reader wouldn't take advantage of recent developments in Net and Web technology, and it won't read newer web pages fully or properly.

Connection Types

There are 2 kinds of Net connections: dial-up and broadband. A modem is the gadget that connects your computer to the Net. Your modem must match the type of connection you pick. Dial-up connection: a dial-up modem for a normal phone connection and an ISDN modem for an enhanced phone connection. Broadband: a cable modem for a TV cable connection and a DSL modem for a high-speed phone connection. Every computer sold today has a dial-up modem installed; the phone or cable company installs the proper modem when the technician comes out to set up your connection.

The company you pick should help you set up the needed hardware and software. It may also give you a program CD filled with software that streamlines the setup process for you. The company may offer additional features or services. Ask about them, and make sure that unwanted add-ons aren't bundled on your monthly bill without your permission.

Dial-up Connections

Here is a brief overview of the 2 types of dial-up connections.

Dial-Up modem

A dial-up modem lets you connect to your ISP via a normal phone line. Think of your computer as a fancy telephone and the computer at the ISP as another fancy telephone. A phone modem lets the 2 computers communicate. You only need to plug a phone cable into the modem connector, which looks and feels like a standard phone jack, and the other end of the phone cable into a standard wall phone jack.

There are 2 types of phone modems: internal and external. A computer purchased today comes with a phone modem inside the computer and a phone jack on the outside. A laptop computer (alias notebook computer) may have a small card for a modem that you push into a card slot; once installed, you can make calls. An older desktop or laptop computer may lack a phone modem; then you must connect an external modem to the computer and to the phone line -- not too convenient.

Phone modems, just like ordinary telephones, possess different features. Now, most modems let you send faxes from your computer; modems can also work as glorified phone answering machines. Modems are of different communication speeds. It is best to buy a computer with the proper combination of communication software and hardware already installed or to have a computer service center configure your computer for you, for this is a complicated task.

> Remark: Rely on an internal phone modem, when possible, so you don't need to handle extra equipment -- there is more to connect, to turn on, and to break.

No installer comes out to setup a dial-up connection. You plug a phone cable into the phone jack on the computer and the other end of the cable into a standard phone jack on a wall. You are usually sent, by your ISP, a program CD that sets up the Net software for you. You call up support at your ISP and have a technician guide you through the setup process. The proper Windows XP configuration is made for your connection, and the proper dial-up data -- your ISP's name and local phone number and your user name and password -- is stored away. Thereafter, you are ready to connect to the Net and Web. Your computer must dial up the ISP to get connected.

ISDN Modem

A dial-up connection over normal phone lines with a phone modem is very slow. AT&T hoped to rectify this in the early 1980's with a different kind of modem for standard phone lines. It invented the ISDN modem -- critics claim in jest that ISDN means "Improvements Subscribers Don't Need". This modem is faster than a phone modem but much slower than either a cable modem or a DSL modem. There are 2 pieces of bad news: ISDN service costs more than the other connection methods, and phone installers almost never know the proper way to set up this service. Don't pick an ISDN provider! (You must often pick ISDN service in parts of Europe because there ISDN service is offered instead of DSL service; but, there they can install it properly.)

Connection Problems

How readily and consistently you make dial-up connections depends on the local phone service as well as the ISP you pick. You may wish to try a

different phone company or ISP if you are frequently disconnected or get busy signals often.

You must tell the ISP whether you have call waiting on the phone line. You must type *70 before the phone number when you set up the dial-up connection. This prefix tells the phone company to turn off the call waiting service when you go online and prevents disruption of the connection by calls to that phone number.

Broadband Connections

Here is a brief overview of the 2 types of broadband connections.

Cable modem

You can rely on a cable modem only if you have cable TV service available. A cable modem uses the same cable that delivers TV programs. A cable modem is usually external and connects either to a NIC connector or to a USB connector. A computer has a NIC connector, which looks and feels like a larger phone jack, if that computer has a Network Interface Card installed. This connector lets you connect your computer to a network -- a business network or the Internet.

> Remark: Don't try to plug the NIC cable into a computer's phone jack instead of the NIC jack -- the plug on a NIC cable looks and feels like that on a phone cable, but it is larger. The plug will jam, and it will be hard to unplug -- as I found out the hard way.

Now, most new computers have a bunch of USB (Universal Serial Bus) ports; they let you connect all types of devices -- printers, scanners, and modems -- to your computer with minimal effort -- usually, just plug them into the USB ports.

Your cable company provides a cable modem for a small monthly fee and installs it for you. Unlike a phone modem, it requires a permanent connection to a dedicated line.

You call the cable company to open an account. A cable guy comes to your place and installs a cable modem, which may look like a laptop computer with a wild hairdo, perhaps installs a NIC card in your computer, and hooks them together. You are always connected to your ISP! There is no need to dial up your ISP to get connected; this is a major advantage of a cable connection over a dial-up connection.

The cable guy splits the TV cable; a piece connects your TV to the network, and a piece connects your computer to the network. The cable company must install the cable if you don't already have a cable hookup. You have a permanent broadband connection to the Net when the cable guy finishes the installation. This connection usually costs less if you also get cable TV service from the same company.

Cable access comes in two forms: the older 1-way and the newer 2-way. With one-way cable, incoming data come from the Net to your PC at high speed via the cable, but outgoing data still use a modem and a phone line. With two-way cable, everything goes over the cable. Your cable company can tell you which kind they offer. (You want either 2-way cable or DSL service.)

DSL modem

You can rely on a DSL modem only if you have DSL service available; check with your phone company. It lets you access broadband communication. A DSL modem is usually external and connects either to a NIC connector or to a USB connector. Your phone company provides the DSL modem for a small monthly fee and installs it for you. Unlike a phone modem, it requires a permanent connection to a dedicated line. You are always connected to your ISP! There is no need to dial up your ISP to get connected; this is a major advantage of a DSL connection over a dial-up connection.

DSL service is supposed to use your existing phone line and in-house wiring. But DSL often works better if the phone company runs a new wire from outside your building to where you use your computer. (Phone companies call this a home run.) For DSL to work, you have to live within a couple of miles of your telephone central office, so DSL is unavailable in many rural areas.

DSL is available at different speeds. The higher speeds cost more. The lowest speed (usually 640Kbps) is fast enough for most users.

You call either your phone company or a local ISP for DSL service. A phone installer comes with a network connection box (a glorified modem) and hooks it up to your computer. DSL modems connect to a NIC port, which you may need to install, or to a USB port (which most new computers already have).

Your phone company may offer video on your DSL, and your cable company may offer local phone service via your cable modem. Check with your phone company for available options.

Originally, communication companies designed DSL to provide video on demand --movies and TV shows; however, most consumers prefer to watch a

pay per view channel or to rent videos from a local store. DSL was a financial bust in this market. Now, thanks to the Net, DSL has a purpose in life -- broadband connections -- and DSL providers are happy again. (The video capability is still available from most providers.)

Connection Options

You can surf for free or pay. Here are the details.

Free Connections

You can access the Net and the Web for free. Your local library probably offers free time on computers connected to the Net; you merely need to pick a user name and personal password to get online.

At work, you may have access to a computer connected to the Net. You can conduct personal business online. Don't do it! Every action you perform -- send e-mail, check out music sites, enter chat rooms, and so on are all logged by the network administrator and archived. (So, don't complain about the boss unless you want others to know.)

You can sign up with a free ISP. Advertisers pay the ISP so you don't, but you must endure a barrage of ads as you surf. Often, they gather information about you and try to sell you stuff. They also limit the time you can stay online per month and limit the number of e-mail messages you can send and receive per month. You may often get busy signals when you try to go online. Moral: You usually get what you pay for. Free ISP's go out of business frequently; so you may find that you no longer have an ISP when you try to connect. You can keep up with the available free services at the FreedomList Web site www.FreedomList.com. FreedomList lets you search for a free ISP, rate or review your free ISP, and check the ratings other FreedomList users have given their free ISP's. This web site also collects news stories concerning free ISPs.

Paid Connections

Unless you have access to a free Net connection, you must pay a company to provide a connection to the Net. Now, most phone and cable providers offer basic Net connections. Pick a reliable provider that offers a service option that meets your needs at a reasonable price.

You can pick a company that offers a basic dial-up Net connection. You need a program to access this connection; you need a program to send and receive e-mail; and you need a program to browse the Web. You can rely on

the programs that are bundled with Windows XP or on other programs that you prefer.

There are providers that offer Net connections and additional online services. Online services make the Net more hospitable for beginners -- they organize information for you, make it easy to chat with others, and so on. Online services provide local phone numbers in most metropolitan areas, but they may fail to provide them in rural areas. Online services usually require you to use proprietary programs. That software may lack basic accessibility features.

America Online (AOL for short) till recently lacked minimal access. A law suit brought by the National Federation of the Blind (NFB) convinced AOL to address this problem. Now, there is relatively good access to AOL services by users who rely on screen readers.

When Microsoft introduced Windows 95, it also introduced the Microsoft Network (MSN), a new online service that was going to eat America Online's and CompuServe's lunch. Several years later, AOL still has its lunch (along with those of CompuServe, Prodigy, the Source, and many other dead competitors). MSN has given up its original proprietary design and has become just another ISP with special Web pages that you can see only if you are an MSN subscriber. The MSN Explorer program, which you install when you sign up for MSN, includes a proprietary Web browser and e-mail program. MSN uses Microsoft's Hotmail e-mail server for its e-mail, so you can't use any non-Microsoft e-mail program to read your mail.

Signing up with MSN is easy if you use Microsoft Windows XP because an MSN icon sits right on your desktop. In fact, Microsoft takes pains to offer you lots and lots of opportunities to sign up during the Windows installation process. Take a look at the MSN Web page at www.MSN.com for more details. You should read its user license very carefully before you sign up. In the past, if you use Microsoft's Hotmail e-mail system (which is part of MSN), you automatically give Microsoft the right to use any information in any e-mail that you send it any way that it likes (Amazing, but true.)

Online services usually restrict or curtail access to controversial parts of the Net. You may view this as a benefit or as an infringement of information exchange. (Parents usually want limited access for their kids; adults typically prefer to surf anywhere on the Net.)

Connection Costs

A connection to the Net can cost little or a lot. Here are a few items to consider.

Most dial-up providers charge about $20 per month -- usually charged to a credit or debit card. (Payment by check usually costs more.) You get unlimited time online or a generous allotment of time per month to surf the Net. There are cheaper services where you are allotted minimal time online and pay an additional charge per hour of extra connect time. Buy unlimited access if you wish to work or do research online; buy minimal time if you only check your e-mail every few days. Make sure that the call is a local number, or else you will pay hefty phone costs! You can get a list of local numbers from the ISP; use those that are free local calls or cost the least.

Cable and DSL connections typically cost more -- $40 to $50 per month. However, they have benefits. A dial-up connection ties up your telephone line so you miss calls or must get another telephone line installed; cable and DSL connections don't interfere with your normal phone service. They are always on and communicate much faster; you save countless hours of time. They are a must if you wish to download music, movies, or large files frequently. Here is another cost: You must take the day off and wait for either the cable guy or the DSL installer. Make the appointment for the early morning; then, if a problem occurs, the technician has the afternoon to fix it. Some companies, such a BellSouth, allow you to install DSL service yourself.

Connections on the Road

You may need to connect to the Net when you travel to check e-mail, send colleagues reports, or send friends letters. Typically, there are 2 ways to connect to the Net when out of the office or away from home.

You can unplug the phone in your hotel room and connect your phone modem and dial your ISP or online service. Ask your provider for a local phone number you can call when at your destination.

Your hotel may offer broadband Net access in your room or at a business center; your computer must have a NIC connector. The connection usually costs about $10 per day.

You can even use the Net while on the road via a cellular modem. This is a small card that you push into a card slot on your laptop. Once installed and properly set up, you can make cellular calls; however, a cellular modem is expensive and very slow. Your best bet is to rely on a hotel connection for the best performance at the lowest costs.

Connection Providers

Usually, there are few cable and DSL providers available in your local area -- typically, your TV cable company and your telephone company and perhaps

a few independent ISPs that have deals with them. However, you can pick from thousands of ISPs -- local and national. You can locate most of them at the web site www.NetGurus.com/ISP.

There are a few national ISPs: MSN (Microsoft Network), Earthlink, Concentric/XO, and AT&T WorldNet. They have plenty of local dial-up numbers across the entire United States, and they have an extensive support staff to help you.

Consider these factors when you shop around for an ISP:

Price and Service: Ask about an unlimited time account if you plan to surf daily or about a minimal time account if you only occasionally wish to surf.

Access numbers: Make sure that local access numbers are available. Also, make sure that you have an unlimited local service plan from your telephone company.

Tech Help: Call and talk to members of the support staff before you sign up. You want courteous technicians who are knowledgeable and eager to help. You also want help available 24/7 because problems crop up at the most unexpected times, and you don't want to wait on hold forever either.

Connect Problems: Make sure you don't frequently get busy signals when you try to connect or when you call for help.

Modem speed: Make sure that the ISP can handle your modem's maximum speed; else, you are limited to the speed of the modem at the ISP.

Find a Local ISP

You must choose an ISP with local access numbers; otherwise you will spend more per month on phone charges than on the cost of the actual Net connection. Occasionally, you (or your computer) will fail to hang up when you're finished, and phone charges will mount up till you disconnect! A local number with unlimited service is very important. Don't sign up with an ISP that has only 800 numbers for access numbers. They may seem cheap, but hidden costs are passed along to you one way or another. The ideal ISP has local access numbers as well as 800 access numbers to use when you travel.

Here are a few ways to find a local ISP:

Read business sections of local newspapers for ads from local ISPs.

Ask at the public library for a list of local ISP's.

Look in the local yellow pages under Internet Services.

Use a friend's Internet account or a trial account from an online service to access the World Wide Web, and check at net.gurus.com/isp for web sites that list ISPs by state, area code, or country.

Talk to friends, neighbors, and relatives about their experiences with Net service providers. They will tell you about problems and benefits.

The Sign Up Process

Don't be intimidated by the process to sign up with the ISP you picked. Call the support number after you receive the program CD and let a technician guide you through the process. This is a 1-time task, and the ISP wants you as a customer and will make sure you get connected properly.

A technician from the ISP will guide you through the sign-up program on the program CD you received, or you can ignore the program CD and its software and have the technician guide you through the connection wizard that comes with Windows XP.

You must provide data about yourself when you sign up. Typically, you must give your complete postal address so the ISP can mail you bills or junk mail. You must give a telephone number where you can be reached; this is necessary when you need a service call returned. You are asked for a credit card number and expiration date; the ISP bills you automatically every month until you cancel your service (or until the credit card is declined). You receive an e-mail once a month when you are billed -- on which date, by how much -- and are told the number of hours that you spent connected the prior month. You are asked for an e-mail name; you can pick anything -- FancyGirl, TigerBoy, etc. You must also provide a user password; keep this private so only you can access your connection and account. Don't pick a birthday or a friend's name for your password, for they are too easy for thieves and hackers to figure out. Rather, make up a sentence -- my dog chases balls and sticks -- and pick the initial letters -- mdcbas -- as a password. You are asked for a bit of personal information (like your mother's maiden name or your favorite flower) so the ISP can verify that a call from somebody claiming to be you is really you. An account manager may call you back at the number you gave to be sure that you are really there. Your account and connection are set up after the software is configured and all data are collected, and you are then ready to surf the Net.

The Required Software

The type of Net connection you pick determines the kind of software you work with. Here is the scoop:

Online Service

America Online (AOL for short) provides a program disk with proprietary software that you must use instead of standard Windows XP software. AOL, the world's largest online service, provides access to both the Internet and its own proprietary services. AOL has over 20 million subscribers. This book has a tutorial for AOL because it is the dominant online service in the United States.

ISP Account

You need a dial-up program which calls the ISP for you. You need an e-mail program so you can send and receive online mail. You also need a web browser so you can surf web pages. Microsoft Windows 95 and beyond includes these 3 types of programs. You can, however, rely on different programs if you prefer.

You make a dial-up connection with the Dial-up Networking program. It works well and in the background; you don't need to think about it or replace it. Outlook Express, a mediocre e-mail program, lets you send and receive online mail. Many users (myself included) prefer Eudora, a competitive e-mail program from Qualcomm, which works well with screen readers. Internet Explorer, the web browser bundled with Windows XP, offers the best access to the Web. Other web browsers -- Netscape used by AOL, Mozilla (a descendent of Netscape), Opera from Europe, and so on -- presently offer minimal access features. This book, therefore, only has a tutorial on Internet Explorer.

Broadband Connection

You make an ISDN connection with the Dial-up Networking program in Windows XP, and you make a broadband connection (cable modem or DSL modem) with the LAN Networking program in Windows XP. You may pick any e-mail program and web browser you wish.

Connection Wizards

A dial-up Net provider typically expects that you will set up the connection yourself between your computer and its network. A staff member will give you the required information -- user name, user password, and local phone number -- and guide you through the process. Windows XP has a wizard, the New Connection Wizard, which helps you with this task, and makes help from your ISP virtually unnecessary in most cases. Here are the steps to connect your computer to the Net.

Get Ready

Get the required data from your ISP.

You will need to enter this information as you run the New Connection wizard.

Properly connect your computer to the phone system.

Your computer acts like another phone extension. You can't use your computer online and make a regular phone call on the same phone line at the same time.

Acquire access to another phone line or cell phone.

You need a second phone to talk to your ISP while you configure the dial-up connection.

Start up your computer as an administrative user.

This automatically occurs if you reach the desktop. Otherwise, pick Administrator from the displayed list of possible users. (You aren't allowed to install software or make system changes unless you have administrative status.)

Run the Wizard

Windows XP's New Connection wizard guides you through the setup process, and, with phone help from your ISP, you should have no trouble. Most users have a single ISP and therefore a single connection. You can however, have multiple accounts, such as an account with a strict ISP provider and another with an online service provider such as AOL or MSN. All of your Net connections are conveniently listed under Network Connections on the Communications menu. Activate this menu item to display a list box with your connections. Highlight a connection and tap the Shift+F10 key to pop up its shortcut menu. You can then perform many common tasks -- activate the connection, make that connection the default, and so on.

Follow these steps to run the New Connection wizard:

1. Pop up the Start menu, then the All Programs menu, then the Accessories menu, and finally the Communications menu.

2. Activate the New Connection Wizard item.

   The wizard starts up. Successive screens tell you what to do and the information you need to enter. The welcome screen just lists the tasks you can perform.

3. Activate the Next button to continue.

This screen lists 4 connection types as radio buttons. Make sure that the radio button labeled Connect to the Internet is checked.

4. Activate the Next button to continue.

   This screen lists 3 ways to proceed. You can pick an ISP from a list; you can manually set up the connection; or you can rely on a CD from your ISP. Method 1 forces you to pick an ISP favored by Microsoft. Method 2 lets you specify the needed data and prevent installation of unnecessary or unwanted software from an ISP. Method 3 offers the most direct way to set up a connection; let the CD provide the required data and assist the wizard to configure the connection.

5. Activate the Next button to continue.

   This screen lists the ways you may connect to the Internet. It summarizes the connection options discussed in this chapter. Make sure that the radio button labeled Connect Using a Dial-up Modem is checked.

6. Activate the Next button to continue.

   This screen has a single edit box where you type the name of your ISP. Enter the name or an easily recognized version of the name.

7. Activate the Next button to continue.

   This screen has a single edit box where you type a local phone number for your ISP. Enter the local phone number with, or without, hyphens. It is a good idea the call this number first to verify that it connects and reaches a modem. (You may need a 1, an area code, or both along with the 7-digit number.)

8. Activate the Next button to continue.

   This screen has 2 edit boxes where you type your user name and your user password. You get both from your ISP. A user name looks something like JohnDoe@business.com, and a typical password has letters and numbers something like m1p2r3.

   This screen also has 3 check boxes, all checked by default. Leave them checked. The option -- Use this account name and password when anyone connects to the Internet --permits different users to go online with this connection when your computer has multiple user accounts set up. The option -- Make this the default Internet connection -- uses this connection in preference to other connections you may set up. The option -- Turn on the Internet Connection Firewall for this connection --

discourages hackers from breaking into your computer and causing great harm. (Confirm with your ISP whether you should, or should not, enable a firewall.)

9. Activate the Next button to continue.

   This screen is the final screen. You should check the check box, Add a Shortcut, so you can activate this connection right on your Windows Desktop.

10. Activate the Finish button to complete the connection process.

    Now, you are ready to connect to the Net.

> Remark: Windows XP has another wizard listed on the Communications menu, the Network Setup Wizard. This wizard helps you link a bunch of computers together to form a home or office network. This is a complicated task and best left to nerds and technicians.

Connection Tasks

The most common task is to make or break a connection with the Net; the next most common task is to alter or update a connection. Here are the details.

Connect or Disconnect

You can place a shortcut for a connection on the Windows Desktop when you set up that connection. Then, you can rely on this shortcut to make or break a connection to the Net. But, you must rely on the Communications menu to connect or disconnect if you lack a shortcut for a connection. You can launch an e-mail program or a web browser after you connect to the Net. Then, you are ready to send and receive e-mail or ready to browse web sites.

A program may make an automatic connection for you; you don't need to make the connection yourself in that case. This behavior depends on the connection's settings and the program's settings. Example: Internet Explorer may fail to make an automatic connection because a connection requires you to provide the password or phone number or because Internet explorer expects to work offline (so you can read web pages stored on your computer). Also, a program may fail to disconnect you. You must manually

disconnect in that case -- activate the connection and press the disconnect button.

An icon shaped like a pair of little computers appears in the Sys Tray when you make a connection. A mouse user can click this icon and pick the disconnect option. A screen reader may let you display the Sys Tray as a list box, let you pick the connection, and then let you disconnect. It is more convenient, however, to place a shortcut on the Desktop for the default connection and rely on this shortcut to connect or disconnect when necessary.

Alter or Update

You enter 4 pieces of data when you run the New Connection wizard. Don't worry if you entered the wrong data or it changes later on. You can update a connection at any time to reflect current circumstances. Example: You can temporarily change the connect phone number when you are on a trip.

You can also alter connection options so a connection works the way you prefer. Example: You may wish to connect automatically for convenience, or you may wish to enter the password for better security when you make a connection.

Follow these steps to update or alter any connection:

1. Pop up the Start menu, then the All Programs menu, then the Accessories menu, and finally the Communications menu.

2. Activate the Network Connections item.

   All the dial-up connections you made (and other network connections) are presented in a list box.

3. Highlight the connection you wish to update or alter.

4. Pop up its shortcut menu and activate the Properties item.

   A property sheet with 5 tab pages pops up. The leftmost tab page, labeled General, holds the phone number and lets you specify an area code and other phone line items. You must check the Use Dialing Rules check box to reveal the various phone number options. (It is here where you tell the dialer program that you have call waiting; you must disable this phone feature when you are online to avoid unintended disconnections.) The next tab page, labeled Options, lists dialing options. Make sure that the check box labeled Prompt for Name and Password is unchecked; otherwise, you must enter these data every time you wish to

connect to the Net even though the data are stored away. The rightmost tab page, labeled Advanced, lets you specify Firewall options. Confirm with your ISP whether you should, or should not, enable a firewall.

5. Make the desired adjustments, and then activate the OK button to finish.

Chapter Summary

You aren't allowed to connect your PC directly to the Internet. You must rely on an Internet Service Provider (ISP) to connect you. Now, just about every telephone and TV cable company offers Internet connections and many other businesses do as well. This chapter tells you about them and describes different connection options.

Connection Types

You need a computer and a connection to access the Net. You can rely on a normal telephone connection, called a Dial-up Connection, or use a broadband connection that is either a Cable Connection or a DSL Connection. This chapter tells you about these connections and how you find a connection provider.

Connection Options

You can access the Net for free. Your local library may offer free time on computers connected to the Net; at work, you may have access to a computer connected to the Net; or you can sign up with a free connection provider.

Unless you have access to a free Net connection, you must pay a company to provide a connection to the Net. Now, most phone and cable providers offer basic Net connections. Pick a reliable provider that offers a service option that meets your needs at a reasonable price. This chapter tells you the best ways to locate and check out Internet Service Providers.

Connection Providers

There are many providers of dial-up connections; these connections are the cheapest and slowest, but many beginners find them acceptable and sufficient. However, users who wish to access audio, music, and video on the Net prefer a broadband connection. There are 2 kinds: a Cable Connection provided by a TV cable company, and a DSL Connection provided by a telephone company -- both types are described in detail.

Get Connected

Windows XP has a New Connection wizard that helps you, step by step, to set up a dial-up connection. A broadband connection requires specialized equipment, and a technician comes to your place and installs the necessary hardware and configures the required software. You only need to deal with this process once; thereafter, you are ready to surf the Net and the Web.

CHAPTER 4: WEB PAGES AND E-MAIL

This chapter offers a brief overview of web pages and e-mail messages. The concepts and terminology presented herein are used throughout other tutorials about the Net and the Web.

Web pages are the modern incarnation of printed and brailled pages, and web sites are the electronic counterparts of books, catalogs, and just about any item that can be printed or brailled. This innovative medium of information transfer offers readers unprecedented ways to gather, organize, and read material.

E-mail messages are the modern incarnation of mailed letters, and e-mail addresses are the electronic counterparts of postal addresses.

This chapter tells you where web pages live and about web addresses and e-mail addresses. You need a web page's address in order to go there. You need a person's e-mail address to send that person an e-mail letter.

HyperText - Mere Kid's Play

A book for a toddler may have pages of different kinds: pop-ups to startle and delight, bells or other sound effects to hear, textured pictures to feel, and text to read. A book for a toddler goes beyond text; it has HyperText. A web page is the computer equivalent of a kid's book - lots of fun, lots of multimedia.

A web browser is just a program that transfers and displays web pages (composed of HyperText). The communication between your computer and your ISP employs the HyperText Transfer Protocol - HTTP for short. You don't need to worry about HTTP just as you don't need to care about the transfer protocols used by telephone service providers. They work; that is, you get your web pages and phone calls quickly and reliably.

Here's another bit of jargon to annoy you. A print publisher uses a Markup Language to layout print pages; a web publisher uses a HyperText Markup Language to layout web pages. You will encounter the prefix HTTP and the suffix HTML often as you surf the Web. They inform you about the transfer protocol to be used and the kind of data to be transferred.

> Remark: You may encounter occasionally the suffix HTM; it's short for HTML. It is a hangover from the DOS days when suffixes were a maximum of 3 letters long.

Windows XP normally doesn't show file extensions -- doc, htm, html, and so on. Here are the steps to reinstate them:

Pop up the Start Menu.

Open the Control Panel window, then activate the Folder Options item.

A property sheet with 3 tab pages pops up.

Activate the View tab page.

Highlight the Advanced Settings tree view.

Make sure that the Hide Extensions for Known File Types is off, then activate the OK button.

There are other Net protocols you may come across as you descend into menus Under Communications in Windows XP. There are 2 fundamental protocols used by the Net: Internet Protocol (IP for short) and Transmission Control Protocol (TCP for short). This pair of communication protocols makes the Net work; HTTP and other protocols make the Net and the Web usable by mere mortals. Examples: PPP (Point to Point Protocol) lets dial-up connections work properly; FTP (File Transfer Protocol) lets files move between your computer and the Net.

Name That Net Computer

Every subscriber on the telephone network has a unique phone number assigned. This ensures that calls are directed to the right locations throughout the phone network. Likewise, every computer on the Net has a unique number assigned as part of the Internet Protocol. This ensures that communications are directed to the right computers throughout the Net. Net numbers are much longer than phone numbers, so names are assigned to computers and networks on the Net for the benefit of users.

There is an international body - Internet Corporation for Assigned Names and Numbers (ICANN) -- responsible for computer and network names used on the Net. Example: You would prefer, no doubt, to remember and type www.icann.org instead of the IP address 192.0.34.65 to communicate with the computer where ICANN is located.

There are 2 ways to classify computers on the Net: by what they are used for and by where they are located geographically. A domain name (alias computer or network name) consists of labels separated by periods.

There were 7 types of institutions originally recognized in the 1980s: com for commercial enterprise, edu for educational institution, gov for governmental body, int for international entity, mil for military installation, net for network facility, and org for any organization other than those covered by the other 6 designations. These 7 suffixes are called Top Level Domain names. The 3 suffixes com, net, and org are available for public use. In November 2000, 7 more top level domain names were adopted. The 4 suffixes biz, info, name, and pro are available for public use.

There are 2-letter top level domain names assigned to geographical areas: country names and regional names. Examples: us stands for United States, ca stands for Canada, and so on.

Basic Web Site Address Examples

A web site address consists of labels separated by periods. The shortest and most common web site addresses have 3 parts - the World Wide Web prefix (www), the computer or network name, and a top level domain suffix. Examples:

www.aph.org - American Printing House for the Blind
www.amazon.com - an online retail store
www.mit.edu - Massachusetts Institute of Technology
www.earthlink.com - my ISP

These web addresses employ general top level domain names, org, com, edu, and net. Instead, a web site address may employ 2-letter state and country domain names. Examples:

www.paris.fr - the official Paris website
www.london.gov.uk - the official London web site
www.ci.atlanta.ga.us - City of Atlanta official web site
www.dol.state.ga.us - Department of Labor for Georgia
www.blind.state.ia.us - Iowa Department for the Blind

Usually, official governmental web sites for states in the United States finish with the 2-letter postal code for the state followed by the 2-letter top level domain suffix us. Official federal governmental web sites finish with the suffix gov.

A web site owner may employ any domain name to mislead. Example: www.whitehouse.gov is the web address for the White House, but

www.whitehouse.com is the web address of a pornography web site. You are advised to get web addresses from reliable sources -- radio, television, newspaper, and advertisement literature of all types.

More Web Site Address Examples

A basic web site address has 3 parts as described in the prior subtopic. Now, you are told about the stuff that may precede or follow a basic web site address.

The prefix http:// before a web site address indicates the HyperText Transfer Protocol. You may omit this prefix because a web browser assumes it by default. A web site with extra security employs the prefix https://; you must always include this prefix.

There are other prefixes for other types of sites. Example: ftp:// indicates the File Transfer Protocol and it refers to a file site instead of a web site. That is, files instead of documents are at the site. You must use a file browser to visit file sites and transfer files. You can find a file browser compatible with screen readers at www.ftpvoyager.com.

A web site has a way to transfer files of all kinds; so, most of the time you don't need a file browser. You can ignore other prefixes as well till you need to learn about them.

A web address always has a top level domain suffix. It is possible, therefore, to leave off the www prefix. Example: www.aph.org and aph.org and www.google.com and google.com work equally well. (Microsoft Word will apply the HyperLink style to a complete web address as you type it, but doesn't apply that style for a partial web address. You must type a space after the complete web address, and then erase it, to make this happen.)

A web address brings you to that web site. A web site may possess few or many individual web pages. Often, you are directed to a specific web page or file at a web site. This is accomplished via a path placed after the web address.

Don't panic! Web addresses are often very long with many parts, but you don't need to remember them or type them. You typically get a web address from an e-mail and can put it "as is" into an electronic address book for future use. You can even assign nicknames to lengthy web addresses so you can refer to them quickly when necessary. You don't need to remember or type:

www.fisica.uniud.it/~deangeli/lab/113_probnotes.html

How you do all of this depends on the web browser you employ.

Home Page Examples

The provider that you picked for Net access wants you to visit its web site as often as possible. So, whenever you launch your web browser, you immediately reach that web site. You may, however, prefer to reach a different web site when you surf the Web. The web site you reach when you launch your web browser is called your Home Page. You can pick any web site as your Home Page. Examples: I have www.google.com as my home page because I usually want to search for current math topics. My wife has www.cnn.com as her home page because she wants to read the current news.

Web Page Navigation

Your browser connects you to your home page. There are 2 basic commands required to move between web pages.

You employ the Tab key and the Shift+Tab key to leap from link to link on a web page. You tap the Enter key to activate the current link and reach its web page. It is that simple.

Surf away! Activate links to visit different web pages of interest. Your browser keeps a temporary list of the web pages you visit.

You may reach a web page you don't want to read. You can back up to the prior web page. Tap the Alt+Left Arrow key to return to the previously visited web page. Your browser looks up that web page in its list of visited web pages. You can tap the Alt+Right Arrow key to revisit the next web page in the list. Taps of the Alt arrow keys mimic flipping pages in a book -- you can flip backward or forward through the visited pages.

There are more handy navigation keys, and you learn about them when you read the Verbal View of Web Documents tutorial.

Connect That Document

Pages are bound together to form a book; web pages are linked together to form a web site. You flip pages in a book to move between pages; you activate hyperlinks (links for short) on a web site to move between web pages. The title page commences a book; the home page commences a web site. That is, you open a book at its title page; you enter a web site at its

home page. The pages of a book are usually located at the same place; the web pages of a web site are typically located on computers scattered throughout the Net. Merely activate a link, and you move to its web page; you don't need to know or care where that web page lives on the Net! A web browser just looks up its web address and fetches that web page for you.

A web page (alias hypertext document) may consist entirely of text elements or may employ multimedia elements. Your web browser transfers text, audio clips, video clips to your computer. The creator of a web page determines the elements that are linked together.

In summary: a web site consists of multiple web pages connected together by hyperlinks. You activate links to get to the various web pages on a web site. Links are usually represented as underlined text and in a different color. Home pages serve as title pages for web sites.

A screen reader can recognize links and will announce them as you move around a web site. You merely tap the Enter key or click the mouse while over a link to activate that link. Then, you are transferred to that web page. This task -- activate a link to get to its web page -- becomes automatic as you browse the Web. Activate a link, then your web browser fetches the linked web page and transfers it to your computer so you can read or enjoy its content.

Jean Amour Polly in 1993 introduced the phrase Surf the Net. By this is meant: you activate links of interest and jump from here to there throughout cyberspace in search of thrills and delightful places.

Here is a concrete example to clarify these ideas. I live in Georgia USA and enjoy listening to the local birds. I wish to learn which birds are in my neighborhood and want to learn their songs and calls. Here is a web site that lets me read about local birds and listen to them.

www.enature.com/audio/audio_home.asp

You can hear the songs and calls of 550+ North American bird species at this eNature web site. You enter your local postal zip code on its home page and only the birds in that zip code are listed for you. How nifty! Audio files are transferred to your computer by your web browser, and bird songs and calls are played through your computer's sound card and speakers. The eNature web site has textual narratives about birds and audio files that play bird songs and calls; this web site has multimedia!

There are over 8 billion 58 million web pages on the Net as of December 2004. You only need to learn your web browser's commands to reach any of them. There are many ways to learn about the web pages out there in cyber

space: Web sites of common interest are announced daily on radio and television and listed in newspapers and magazines. Web addresses are mailed to you by e-mail by numerous businesses and groups. Most importantly, you can have a web site called a Search Engine look up web sites of interest for you; you merely list words or phrases about a topic of interest, and the search engine lists all web sites on that topic. All of this you learn about in subsequent tutorials.

> Remark: You must have the most up-to-date version of your screen reader to ensure that multimedia web sites are navigated and read properly. Older screen readers don't handle "flash" and other visual web page attributes properly.

Make That Web Site Accessible

All web sites aren't created equal: some are more screen reader friendly than others, and some are impossible to navigate comfortably with a screen reader. Many groups push for full access, and a few states sue web site owners on behalf of their disabled citizens.

Visually-impaired Net users share data about accessible web sites on e-mail lists, and there is a nonprofit organization dedicated to the accumulation of accessible web sites, the National Library for the Blind in the United Kingdom. The web site www.a-sites.org offers a gateway to accessible web sites. Here is a list of its accessible sites grouped by category:

Animals & Wildlife
Art
Books & Reading
Children
Computers & Internet
Disability
Education
Environment
Employment
Fashion & beauty
Films
Finance
Food & Drink
Gardening
Government Local Authorities
Government National
Health & Fitness

History
Hobbies
Home Design
Humor
Law
Libraries
Museums
Music
News
Other
Politics
Radio
Reference
Religion
Science
Shopping
Sport
Theatre
Travel
TV
Visual Impairment
Weather
Web Portals
Young Adults

You merely enter the A-Sites web site and pick a category of interest. Then, the web sites are listed with their names and brief descriptions. Web sites in the UK as well as all over North America are listed.

Many groups strive to make their web sites accessible, and they follow the web site guidelines established by the World Wide Web Consortium (w3c for short). Web site administrators can confirm the accessibility of their web sites via access validation tools. The most widely used validation tool is called Bobby -- named most probably after a British police officer who stands guard. Web sites with the Bobby logo are definitely accessible, and most web sites proudly place this logo on their home pages. Managers can get their web sites Bobby approved at:

bobby.watchfire.com/bobby

You can actually validate a single web page at:

www.cast.org/bobby

It is our responsibility as disabled Web users to encourage web site managers to validate their web sites so all visitors can partake of their offerings.

Use E-mail on the Net

You have an e-mail address that connects you to all other users on the Net. You pick a user name when you sign up with a connection provider. You can choose just about any letter and number combination as your user name. Examples: Peter.duran, Peter-Duran, pduran, duran99 are all valid user names. There are already millions of user names registered, so you may need to be creative or attach a number suffix -- duran99 -- to distinguish you from the other users with the same user name.

Your e-mail address consists of your user name and your Net provider's name separated by the at Sign. Examples: big.dog@EarthLink.com, fat-cat@aol.com, and peter.duran@nowhere.com are all possible e-mail addresses. You can pick, of course, a user name that has no resemblance to your actual name; many users do this to maintain their anonymous status online. Many users possess multiple e-mail addresses -- for work, at home, at school, and so on. Many professionals -- doctors, educators, and the like -- use various e-mail addresses so they can keep their professional relationships and social contacts separate. AOL introduced "screen names" so all users may stay unidentified. You should never take for granted the identity of an e-mail acquaintance!

Your anonymous status on the Net doesn't give you immunity against prosecution if you engage in illegal or deceitful activity. A connection provider must turn over the real identity of a user if a proper court order is issued.

Postal Mail

You prepare a postal letter for a friend in 2 steps: you address an envelope and you write a letter to be placed in the envelope. The envelope has 2 pieces of information placed on it: the Return Address (your address) and the Delivery Address (your friend's address). Both addresses are required. The return address, the From Address, lets the U.S. Postal Service and your friend know who sent the letter. The delivery address, the To Address, lets the U.S. Postal Service deliver the letter to your friend. (Preprinted labels for birthday

presents often show From and To fields to distinguish the giver from the receiver.)

The address for the sender has 2 parts: the sender's name followed by the sender's location -- like Santa Claus at the North Pole. Both items are required. The name information lets the U.S. Postal Service identify the sender. The location information lets the U.S. Postal Service deliver the letter to the sender's local post office.

The letter is a message, short or long, placed in the envelope. Its content is private whereas the 2 addresses on the envelope are public.

Your letter is sent to your friend in several steps:

You place the letter in an outbox -- often located on the street corner.

A postal employee takes the letter out of the outbox and brings it to the local post office.

Your letter is temporarily stored there, sorted there, and placed in the postal network.

Your letter is routed through the postal network.

A postal employee places the letter in your friend's Inbox -- a mailbox usually at their residence.

Your friend takes the letter out of their Inbox and reads it.

Or, the U.S. Postal Service returns the letter to you as undeliverable.

You may have given an incorrect delivery address; your friend is no longer at that address; or the U.S. Postal Service broke down somewhere along the postal network.

You can send a letter to a foreign country via the U.S. Postal Service.

The letter travels through the U.S. postal network, passes through a gateway, and enters another country's postal network.

Electronic Mail

The typical person prints out a letter, addresses an envelope, stuffs the letter into the envelope, puts a stamp on it, walks to the nearest mailbox or post office, and finally sends the correspondence via "Snail Mail." The savvy computer user logs onto the Internet, runs an Email program, types the

receiver's Email address, writes a letter, and finally, with a key press, instantaneously sends the correspondence to the correct recipient.

Email (short for Electronic mail) is analogous to postal mail in most respects. Its discussion parallels that given for postal mail in the previous section.

An email program is software that lets you write, send, receive, and manage electronic letters -- alias email messages. There are many email programs on the market. Microsoft includes an email program with Windows XP called Outlook Express. Many blind users prefer Eudora Lite -- a free and very screen reader friendly email program from Qualcomm.

Email Header

An electronic letter is placed in an electronic envelope, called the email header. The email program gets out the pretend envelope; you only need to address it.

The email header, like a real envelope, has places for the sender's address and for the recipient's address. It also has places for additional useful information. The typical email header is laid out like this:

From: Your Name & Return Address

To: Delivery Address

Subject: Letter Content Description

Cc: Carbon Copy Addresses

Bcc: Blind Carbon Copy Addresses

Attached: Files Sent with the Letter

These 6 fields are placeholders for specific kinds of data. Typically, you tap the Tab key repeatedly to move the text cursor onto a particular field, or you can just click inside that field to accomplish this. You can type data into the To, Subject, Cc, and Bcc fields. Typically, the email program automatically places your real name and your return address (your electronic address) in the From field. You must execute a command to place a file name into the Attachment field.

The "From"field usually contains the sender's full name and always contains the sender's email address.

The "To" field always contains the recipient's delivery address or nickname.

The "Subject" field contains a brief description of the letter's content. You can leave this field blank -- though it is a breach of email etiquette to do so. (This field is analogous to a written note on the outside of a real envelope.)

The "cc" field contains the email addresses or nicknames of people to whom a "carbon copy" (courtesy copy) of the letter is to be sent. These recipients are displayed in the email header for all other recipients to read. You can include multiple addresses or nicknames; they must be separated by commas. You can leave this field blank. (This is analogous to the same letter sent to multiple persons with a list of these persons placed inside every envelope.)

The "bcc" field contains the email addresses or nicknames of people to whom a "blind carbon copy" (blind courtesy copy) of the message is to be sent. These recipients aren't displayed in the email header, and the recipients in the "to" and "cc" fields won't know that a copy of the letter went to these other addresses. You can include multiple addresses or nicknames; they must be separated by commas. You can leave this field blank. (This is analogous to the same letter sent privately to multiple persons.)

The "attachment" Field contains the name of a file that is sent along with the letter. You can leave this field blank. (This is analogous to a letter pasted to a box, and the box is sent to the delivery address at the same time as the letter.)

The "letter" field is the blank area below the email header where you type the actual letter. The letter can be as short or as long as you like. You can even leave this field blank -- though it is silly to send a blank sheet of paper as a letter.

Every e-mail program employs a message header with these types of fields. Every e-mail program also has an "inbox" where received messages are saved and an "outbox" where all sent messages are saved. Which e-mail program you prefer depends on its cost and other features and on its compatibility with your screen reader.

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